

# SEMICONDUCTOR DATA

Early 1980s ending with 132219  
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**McIntosh<sup>®</sup>**

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## NOTES

This manual contains information covering the semiconductor devices used in McIntosh products.

**McIntosh Part No.** This column lists the part numbers of all currently available semiconductor devices. If the part number ends with the letter "R", the device is used for repair only. Part numbers of devices no longer available appear on the OBSOLETE PART SUBSTITUTION LIST on page 9.

**Substitute (Note).** This column shows a part number that can be used to replace another part. In the cases where a letter in parenthesis follows the substitute part number, the part is not identical and the following note applies:

- (a) This device has a different lead arrangement than the original part. Refer to the outline drawings starting on page 10 to identify the differences.
- (b) This device has a different case type and may require a change in the mounting arrangement.

**Commercial Type (Mfg.)** This column lists a commercial device that can be used as a replacement for the McIntosh part. In some cases, it may be necessary to test the commercial part to the McIntosh specifications listed. The number in parenthesis identifies the manufacturer of the device from the list below.

**Outline Dwg.** The number in this column identifies the outline of the part from the drawings starting on page 10.

The electrical data columns indicate technical information for device testing purposes.

## SEMICONDUCTOR MANUFACTURERS

- |                                      |                      |
|--------------------------------------|----------------------|
| 1. EDAL                              | 13. Sanyo            |
| 2. NPC                               | 14. General Electric |
| 3. Fairchild                         | 15. Solitron         |
| 4. EDI                               | 16. Siemens          |
| 5. Motorola                          | 17. RCA              |
| 6. Power Components                  | 18. National         |
| 7. AmpereX                           | 19. TRW              |
| 8. Hewlett-Packard                   | 20. Intersil         |
| 9. Lansdale Transistor & Electronics | 21. Raytheon         |
| 10. General Instruments              | 22. Signetics        |
| 11. AND                              | 23. Sprague          |
| 12. Texas Instruments                | 24. Hitachi          |

# DIODES

McIntosh Part No.	Substi- tute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Diodes-Rectifiers		— Zener-Diodes —			Remarks
				PRV Volts	I <sub>F</sub> mA	V <sub>Z</sub> Volts	Tol. %	P <sub>D</sub> mW	
070003	070052	1N541/542	16	45	10				Ge
070018R		G6R19H (1)	16	1200	10				Varactor
070020R		V13 (2)	16						
070025		1N982B	16			75	5	400	
070026R		G4R48H (1)	63	3000	4				
070031		1N4820	16	400	1.5A				
070035R	070088(b)		6			5.6	10		
070038R		1N3492R	67	100	18A				Case Anode
070039R		1N3492	68	100	18A				Case Cathode
070041		1N5401	24	100	3A				
070043R		1N4724	55	800	3A				
070044		PD40 (4)	15	400	2A				Full Wave Bridge
070046		MZ2361 (5)	16			1.34(V <sub>f</sub> )	2	@10mA	Stabistor(Selected V <sub>f</sub> )
070047		1N4148	16	75	10				
070051		PE05 (4)	15	50	4A				Full Wave Bridge
070052		1N541	16	45	10	< 0.5(V <sub>f</sub> )		@2mA	070003 (Selected V <sub>f</sub> )
070053R		3TZ180B (6)	16			180	5	3W	
070054R		BZX61C51 (7)	16			51	5	1W	
070055		MPN3401 (5)	11	35					Pin Diode
070056R		TIL209 (12)	58						LED-Red GaAsP
070057R		1N750A	16			4.7	5	400	
070059		1N4006	16	800	1A				
070060R		ZB200B (6)	16			200	5	1W	
070061		BZX61C15 (7)	16			15	10	1W	
070062R		1N987B	16			120	5	400	
070063R		1N4751A	16			30	5	1W	
070064R		1N968A	16			20	10	400	
070065		BZX61C24 (7)	16			24	5	1W	
070066		BZX61C9V1 (7)	16			9.1	5	1W	
070067R		1S351	16						Varactor
070068R		1S188	16			16	5	1W	
070069R		1N34A	16	60	5				Ge
070070R	070047	1S2473	16						
070071R		V06C	16						
070072R		V05C	16						
070073R			16						Zener diode
070074R		WZ162	16			16	5		
070081		1N6263	16	70					Schottky
070085		1N5234B	16			6.2	5	500	
070086		HP5082-3188 (8)	16	35					Pin diode
070087R		MR250-2 (5)	16	2000	250				HV Rectifier
070088			6			5.6	10	300	
070089R		1N5862B	4			16	5	500	
070091	070065	1N5252B	16			24	5	500	
070092		MDA3502 (5)	39	200	35A				Bridge Rect.
070093		HP5082-4658 (8)	58						LED-Red GaAsP

# DIODES

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Diodes-Rectifiers		— Zener-Diodes —			Remarks
				PRV Volts	I <sub>F</sub> mA	V <sub>Z</sub> Volts	Tol. %	P <sub>D</sub> mW	
070096	070046	MZ2361 (5)	16			1.06(V <sub>f</sub> )	5	@500 $\mu$ A	Stabistor (Selected V <sub>f</sub> )
070098		FDH400 (3)	16	175	500				
070099		1N5242B	16			12	5	500	
070100		MV5753 (5)	10						LED-Red GaAsP
070101R		1N972B	16			30	5	400	
070102		1N978B	16			51	5	400	
070103		1N5248B	16			18	5	500	
070104R		MBD101 (5)	4						Schottky
070105		MV104 (5)	12						Varactor (Selected, Matched)
070106R		LTE-PN-LS129 (9)	54						Ge (Transistor used as Diode)
070108		MV5075C (10)	10						LED-Red GaAsP
070109		MV5374C (10)	57						LED-Yellow GaAsP
070111		MV57124 (10)							Rect. LED Red
070112		75W02M (10)	18	200	750				Bridge Rectifier
070113		MVS460 (5)	4			33	5	625	Tuning Diode Regulator
070114	070089	1N5246B	16			16	5	500	
070115		205R (11)	13						LED-Red
070116	(order 045600)	LD460 (12)	29	3	35				LED Dot Display
070120R		1N5229B	16			4.3	5	500	
070121		1N5257B	16			33	5	500	
070122		SVC211 (13)	12						Varactor (Selected, Matched)
070123		MDA3504 (5)	39	35	400				Bridge Rectifier

# THYRISTORS & TRIGGERS

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	PRV Volts	I <sub>F</sub> Amps	I <sub>GT</sub> mA	Function	Remarks
131001R		SC41F (14)	47	100	6	50	SCR	
131004R		2N4991 (14)	37		175mA		Bi-lateral switch	V <sub>g</sub> = 6-10V
131005R		MAC11-2 (5)	69	50	8	50	Triac	
131008		C107M3 (14)	28	600	4	0.5	SCR	
131009		2N5060	64	30	0.8	0.2	SCR	
131010		C107M41 (14)	60	600	4	0.5	SCR	
131011		MAC91A-1 (5)	37	30	0.6	10	Triac	
131012		C106M (5)	45	600	4	0.5	SCR	
131014		MCR264-6 (5)	65	400	40	90	SCR	

# TRANSISTORS

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Polarity	V <sub>CEO</sub> V <sub>DS</sub>	h <sub>fe</sub> y <sub>fs</sub> min	h <sub>fe</sub> y <sub>fs</sub> max	I <sub>c</sub> I <sub>DSS</sub> mA	P <sub>D</sub> @ 25°C mW	Remarks
132014R		SE7001 (3)	7	NPN	150	30		30		
132015	132087(a)	SE3001 (3)	53	NPN	12	20		8		
132021R	132171(a)	2N3569	53	NPN	40	90		30		
132023R		2N3767	38	NPN	90	25		150	14W	P <sub>D</sub> @ T <sub>c</sub> =100°C
132024R		2N3741	38	PNP	90	25		150	14W	P <sub>D</sub> @ T <sub>c</sub> =100°C
132028		2N3738	38	NPN	120	65		50		
132032	132172(a)	2N3645 (14)	53	PNP	60	50		100		
132036R		SDT9202 (15)	38	NPN	90V <sub>cer</sub>	20		4A	117W	
132038	132153(b)		7	NPN	80	40		100	3W	See service bulletin 039167
132039	132154(b)		7	PNP	80	40		100	3W	See service bulletin 039167
132042		2N3405	59	NPN	60	180	540	2	560	Selected V <sub>CEO</sub>
132056	132096(a)	2N5087 (5)	22	PNP	50	250	800	100μA	350	
132059R		2N3739	38	NPN	300	40	200	100	20W	
132061R		MFE3004 (5)	50	N	20	2mmho		2-10	200	MOSFET
132064R		MFE3009-1 (5)	35	N	25	6.3mmho		5-30	300	Dual Gate MOSFET
132065		2N4231 (5)	38	NPN	40	50		500	20W	
132066		2N3866 (5)	7	NPN	30	10	200	50	5W	
132068	132097(a)	2N5484 (5)	25	N	25	3mmho	6mmho	1-5	310	JFET
132070R		2N5303	38	NPN	80	30	90	5A	100W	P <sub>D</sub> @ T <sub>c</sub> =75°C
132072	132080	2N4922	41	NPN	60	40		200	30W	
132077	132094(a)	BC148C (16)	42	NPN	30	450	900	2	220	
132079R		(5)	41	PNP	90	40		150	30W	
132080R		(5)	41	NPN	90	40		150	30W	
132081R		(5)	41	NPN	90	60		50	30W	
132086R		MEM655 (10)	50	N	20	6	10	1-20	225	
132087		MPS3563 (5)	22	NPN	12	20	200	8	310	
132088		3N201	35	N	24	8mmho	12mmho	5-15	300	Dual Gate MOSFET
132090		MPSA14 (5)	22	NPN	40	10K		10	500	MPSA14 (Selected V <sub>CEs</sub> )
132092	132093	BC238C (16)	20	NPN	20	380	800	2	300	
132093	132094	BC239C (16)	20	NPN	20	380	800	2	300	
132094	132185(a)	BC414C (16)	20	NPN	45	380	800	2	300	
132095	132185(a)	(14)	20	NPN	60	350		2	400	
132096	132056(a)	BC416C (16)	20	PNP	45	380	800	2	300	
132097		2N5245 (18)	14	N	30	4.5mmho	7.5mmho	5-15	360	JFET
132098R	070106	(9)	7	PNP	(V <sub>CEs</sub> = 0.266 to 0.294 @ 30mA)					
132102		MJE340 (5)	41	NPN	220	20		1	1W	
132105	132093	BC239C (16)	20	NPN	20	450	900	2	300	BC239C (Selected for Noise)
132107R	132097(a)	2SK41E	36	N	18	7.5mmho		18	200	2N5485/2CK41E
132108R	132087(a)	2SC1047C	36	NPN	12	20		8	350	
132109R	132087(a)	2SC710DC	36	NPN	12	20		8	350	
132110		BF254 (16)	34	NPN	20	115		1		
132115R		2SA684R	62	PNP	50	60	340	1A	7W	
132118R		2SK34B	17	N						JFET
132119R		2SC1124-2	8	NPN	250	75		50	20W	
132120R		2SA706A706	8	PNP						
132121R		2SD3236	38	NPN						
132122R		2SC711E	36	NPN	40	100		10	300	
132123R		2SA641M	36	PNP	50	175		150	400	

# TRANSISTORS

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Polarity	V <sub>CEO</sub> V <sub>DS</sub>	h <sub>fe</sub> Y <sub>fs</sub> min	h <sub>fe</sub> Y <sub>fs</sub> max	I <sub>c</sub> I <sub>DSS</sub> mA	P <sub>D</sub> @ 25°C mW	Remarks
132124R		2SC9450	36	NPN						
132125R		2SC1321R	62	NPN	50	150		10	400	
132126R		2SC1061C	44	NPN	70	70		1	50W	
132127R		2SD313	44	NPN	70	70		1	50W	
132136		MPSA42 (5)	22	NPN	300	40		30	625	
132140R		MPSA20 (5)	22	NPN	40	100		5.0	625	
132143	132171	MPSD05 (5)	22	NPN	25	50		50	350	
132147		MPSA93 (5)	22	PNP	200	25		1	600	
132148	132187	MPSU57 (5)	8	PNP	100	60		50	1W	
132149		MPSU07 (5)	8	NPN	100	60		50	1W	
132150	132172	MPSD55 (5)	22	PNP	25	50		50	350	
132151R		2N6248 (17)	38	PNP	100	50		750	100W	Selected V <sub>CEO</sub>
132152		1B09 (17)	38	NPN	100	50		750	100W	Selected V <sub>CEO</sub>
132153R		2N5320 (5)	7	NPN	90	40		100	10W	
132154R		2N5322	7	PNP	90	40		100	10W	
132155		LM114 (20)	66	NPN	30	200				Dual
132164R	132208		38	NPN	140	25		7.5A	250W	
132165R	132209		38	PNP	140	25		7.5A	250W	
132166		D45E2 (14)	44	PNP	60	1000		10A	50	Darlington
132167		D44E2 (14)	44	NPN	60	1000		10A	50	Darlington
132168R										
132169R			36							
132170		MPF970 (5)	25	P	25	[r <sub>DS(on)</sub> 100Ω max]		15-60	350	JFET
132171		MPSA05 (5)	22	NPN	60	50		100	625	
132172		MPSA55 (5)	22	PNP	60	50		100	625	
132173		(5)	5	PNP	60	80		1A	70W	Selected MJE2955
132174		(5)	5	NPN	60	80		1A	70W	Selected MJE3055
132175	132185(a)	BC546B (16)	20	NPN	65	110		100	500	
132176	132096(a)	BC560C (16)	20	PNP	30	110		100	500	
132178		(18)	25	N	25	10mmho	18mmho	25-60	300	JFET, Selected J-310
132179		LT1001A (19)	7	NPN	15	35		200	3.5W	
132181		MPSH10 (5)	17	NPN	25	60			350	
132182		MPSA64 (5)	22	PNP	30	10k		10	500	Darlington
132183		(5)	5	NPN	120	40		1A	50W	Selected MJE15028
132184		(5)	5	PNP	120	40		1A	50W	Selected MJE15029
132185		(5)	22	NPN	60	400		1	625	Selected 2N6429A
132187		(5)	8	PNP	120	60		1A	10W	Selected MPS-U57
132188		(17)	38	NPN	140	25		10A	250W	
132189		(17)	38	PNP	140	25		10A	250W	
132193		2N4392 (5)	25	N	30	[r <sub>DS(on)</sub> 60Ω max]		30	625	JFET
132194	132187	2N6556 (18)	8	PNP	120	60	200	10	2W	Selected V <sub>CEO</sub>
132195	132185	(5)	22	NPN	40	400		1	625	Selected 2N6428A
132196		2N6553 (5)	8	NPN	120	60	200	10	2W	Selected V <sub>CEO</sub>
132197		(5)	38	NPN	120	75		1A	75W	Selected MJ3247
132198		(5)	38	PNP	120	75		1A	75W	Selected MJ3237
132203		(5)	38	NPN	140	75		1A	90W	Selected MJ4248

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Polarity	V <sub>CEO</sub> V <sub>DS</sub>	h <sub>fe</sub> Y <sub>ts</sub> min	h <sub>fe</sub> Y <sub>ts</sub> max	I <sub>c</sub> I <sub>DSS</sub> mA	P <sub>D</sub> @ 25°C mW	Remarks
132204		(5)	38	PNP	140	75		1A	90W	Selected MJ4238
132205		MFE521 (5)	47	N	25	10mmho	20mmho	30	300	MOSFET Dual Gate
132208		(5)	38	NPN	140	25		7.5A	250W	
132209		(5)	38	PNP	140	25		7.5A	250W	
132210		MDS21 (5)	8	NPN	300	30	250	500	2W	
132211		MDS60 (5)	8	PNP	300	30	250	500	2W	
132212		(5)	38	NPN	250	20		16A	250W	
132213		(5)	38	PNP	250	20		16A	250W	
132214		2N6553	8	NPN	100	80	300	50	2W	
132215		2N5551	22	NPN	160	80		600	350	
132216		(5)	38	PNP	250	20	150	2A	35W	Selected 2N6423
132217		(5)	38	NPN	250	20	150	2A	35W	Selected 2N4240
132218		MPSA05 (5)	22	NPN	60	50		500	625	Selected for Noise
132219		MPSA55 (5)	22	PNP	60	50		500	625	Selected for Noise

## INTEGRATED CIRCUITS

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Function
133001R		CA3012 (17)	27	Wide Band Amplifier
133002		CA3042 (17)	9	Wide Band Amplifier AF Preamplifier/Driver
133003	133006(a)	CA3028B (17)	31	Differential/Cascode Amplifier
133004		MC1303 (5)	9	Dual Amplifier
133005	133003	CA3053S (17)	31	Differential/Cascode Amplifier
133006		LM371 (18)	27	Balanced Mixer
133007R	133041	MC1437P (5)	9	Dual Op Amp
133008R		MC7479P (5)	9	Dual type-D F-F
133025		MC10131 (5)	19	ECL, Dual Master-Slave Type-D F-F
133028		MC4558CP1 (5)	21	Dual Hi-Speed Op Amp
133029		CA3089E (17)	19	FM-IF System
133030		MLM309K (5)	3	+5V Regulator
133031		μA703HC (3)	23	RF-IF Amplifier
133034		μA753C (3)	21	FM Gain Block
133036		MC1355P (5)	9	Limiting FM-IF Amp
133037	133068	MLM301AP1 (5)	21	Op Amp
133040		MPQ6100A (5)	9	Quad Complimentary Transistor Array
133041R		MC1437P (5)	9	Dual Op Amp (noise selected)
133042		IH5011 (20)	19	Quad JFET Switch
133043		LF356N (18)	21	BI-FET Op Amp
133044		LM320T-18 (18)	5	-18V Regulator
133045		LM340T-18 (18)	26	+18V Regulator
133051		IH5009 (20)	9	Quad JFET Switch
133052		AH5015 (20)	19	JFET Switch
133053		MC14013AL (5)	9	CMOS, Dual Type-D F-F
133054		CA3140S (17)	2	CMOS, Op Amp
133055R		MM5837N (18)	21	Noise Generator
133056		TCA4500A (5)	19	MPX-PLL Demodulator
133058		74LS197N (5)	9	Presetable 4-Bit Binary Counter
133059		74LS00N (5)	9	Quad, 2-Input NAND Gate

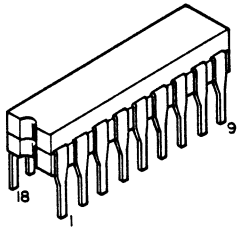
# INTEGRATED CIRCUITS

McIntosh Part No.	Substitute (Note)	Commercial Type (Mfg.)	Outline Dwg.	Function
133060		74LS196N (5)	9	Presetable Decade Counter
133061		MC10116N (5)	19	Triple line Receiver
133062		74LS113AN (5)	9	Dual J-K F-F
133063		MC14011B (5)	9	CMOS, Quad 2-Input NAND Gate
133064		MC14001B (5)	9	CMOS, Quad 2-Input NOR Gate
133065		RC4156DB (21)	9	Quad Op Amp
133066	133067	NE5534N (22)	21	Op Amp
133067		NE5534AN (22)	21	Op Amp Low Noise & THD
133068		LM201AN (18)	21	Op Amp
133069		ULN2031A (23)	21	LED Driver
133070		LM379S (18)	61	Dual Power Amp
133071		$\mu$ A759U1C (3)	56	Power Op Amp
133072		74LS20N (5)	9	Dual 4-Input NAND Gate
133073		MC14071B (5)	9	CMOS, Quad 2-Input OR Gate
133074		MC14072B (5)	9	CMOS, Dual 4-Input OR Gate
133075		MC14073B (5)	19	CMOS, Quad NOR R-S Latch
133076		MC14081B (5)	9	CMOS, Quad 2-Input AND Gate
133077		MC14075B (5)	9	CMOS, Triple 3-Input OR Gate
133078		MC14528B (5)	19	CMOS, Dual Monostable Multivibrator
133079		9368DC (3)	19	TTL, 7-Segment Decoder/Latch/Driver
133080		UAA180 (16)	1	12-Segment LED Bar Graph Driver
133081		TMS1976NL (12)	1	NMOS, Priority Encoding Touch Sensor
133082		MC14028B (5)	19	CMOS, BCD to Decimal Decoder
133083		MC14519B (5)	19	CMOS, Quad 2-Channel Data Selector
133084		MC14017B (5)	19	CMOS, Johnson Decade Counter
133085		MC14027B (5)	19	CMOS, Dual J-K F-F
133086		MC7815CT (5)	26	+15V Regulator
133087		MC7915CT (5)	5	-15V Regulator
133088		MC79052CT (5)	5	-5.2V Regulator
133089		LM3914N (18)	1	10-Segment LED Bar Graph Driver
133090		74LS47 (5)	19	TTL, 7-Segment Decoder/Latch/Driver
133091		MC14526B (5)	19	CMOS, Programmable 4-bit Counter
133092		MLM339AP (5)	9	Quad Comparator
133093		MC78L05ACP (5)	40	+5V Regulator
133094		NE5532N (22)	21	Dual Op Amp
133100		HA12412 (24)	19	FM-IF System
133101		HA12016 (24)	19	MPX-PLL Demodulator
133102		S042P (16)	9	RF Mixer
133103		LC7207 (13)	49	Tuning Control
133104		LA5700 (13)	48	Tuning Voltage Regulator
133105		MC3458P1 (5)	21	Dual Hi-Speed Op Amp
133106		LC7250 (13)	49	Counter/Clock/7-Segment Driver
133107		DS8629N (18)	21	ECL, Divide-By-100 Prescaler
133108		MC7805CT (5)	26	+5V Regulator
133109		MC4047B (5)	9	CMOS, Monostable/Astable Multivibrator

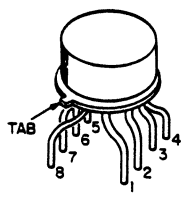
## OBSOLETE PART SUBSTITUTION LIST

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070001	070020	132011	132094(a)	132134	132208
070002	070085	132017	132095(a)	132160	132094
070004	070031	132018	132095(a)	132186	132070
070005	070031	132022	132153 (a)	132501	132093
070006	070059	132025	132070	132502	132094
070007	070059	132026	132095(a)	132503	132093
070008	070031	132027	132032	132504	132094
070009	070031	132029	132096(a)	132515	132028
070010	070031	132030	132094(a)	132516	132028
070011	070066	132031	132096(a)	132517	132036
070012	070025	132033	132059(a)	132518	132036
070013	070031	132041	132093(a)	132519	132036
070014	070031	132043	132070	132520	132036
070015	070031	132045	132064	132521	132023
070016	070059	132046	132072(b)	132522	132023
070017	070059	132047	132064	132523	132023
070019	070031	132048	132061(a)	132524	132023
070021	070061	132049	132097(a)	132525	132023
070022	070047	132050	132185(a)	132526	132023
070023	070035	132051	132185(a)	132527	132024
070024	070066	132052	132090(a)	132528	132024
070027	070041	132054	132185	132529	132024
070028	070031	132055	132094(a)	132530	132024
070030	070031	132057	132093(a)	132531	132024
070032	070059	132058	132061	132532	132024
070033	070059	132060	132064	132533	132070
070036	070043	132062	132094(a)	132534	132070
070037	070053	132063	132094(a)	132535	132070
070040	070046	132069	132185(a)	132536	132070
070042	070089	132073	132097(a)	132537	132070
070045	070051	132074	132096(a)	132538	132070
070048	070089	132075	132094(a)	132539	132093
070049	070065	132076	132087	132540	132095
070050	070092(b)	132078	132102	132541	132070
070058	070087	132082	132110(a)	132542	132070
070090	070066	132085	132070		
070097	070089	132089	132093(a)		
070119	070046	132091	132094(a)		
131002	131004	132100	132182		
131003	131005	132103	132164		
132001	132098	132106	132065		
132002	132095(a)	132111	132090		
132003	132014	132112	132094(a)		
132004	132094(a)	132113	132093(a)		
132005	132095(a)	132114	132096(a)		
132007	132032	132117	132056(a)		
132009	132015(a)	132128	132208		
132010	132098	132133	132209		

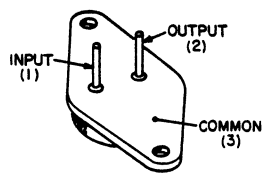
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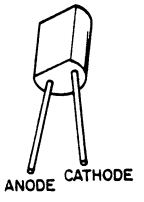
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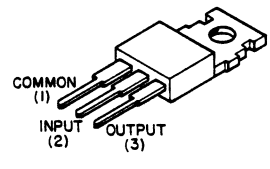
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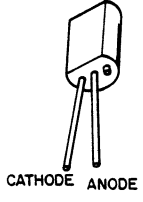
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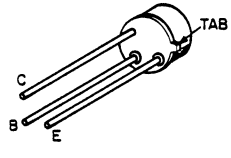
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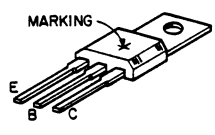
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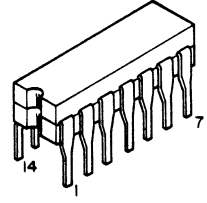
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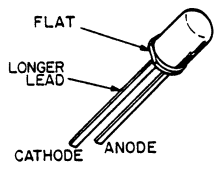
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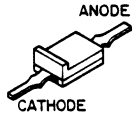
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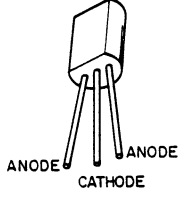
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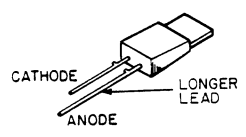
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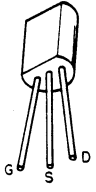
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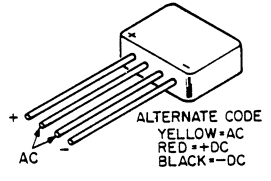
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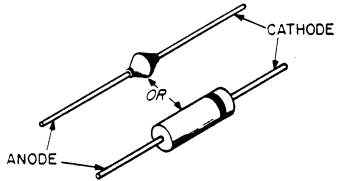
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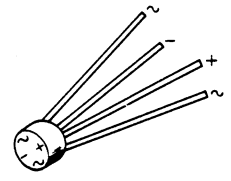
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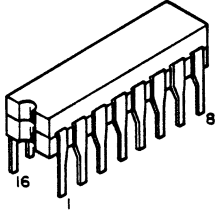

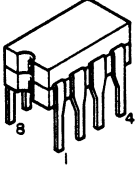

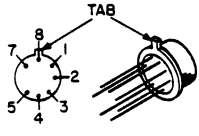
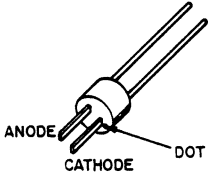

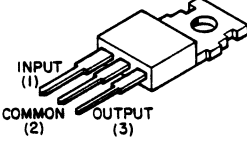
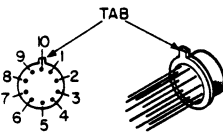
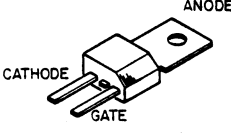
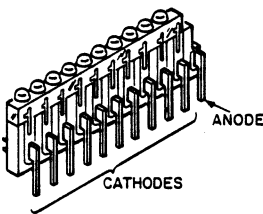

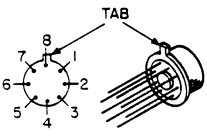
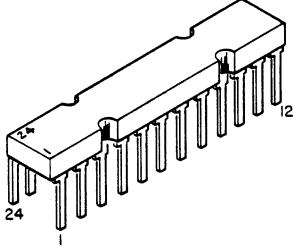


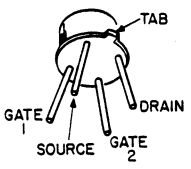



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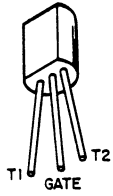


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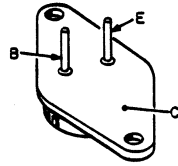


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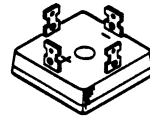
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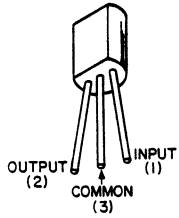
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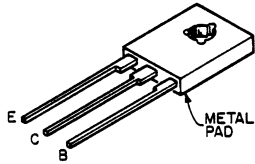
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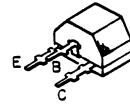
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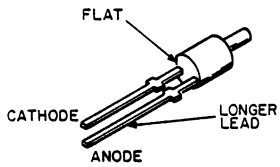
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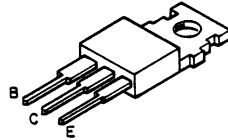
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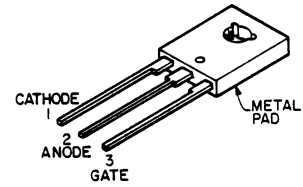
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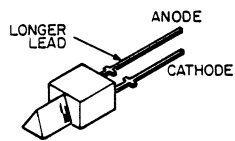
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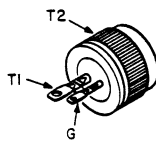
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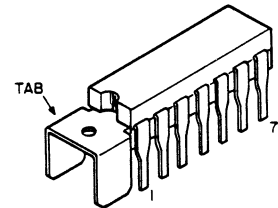
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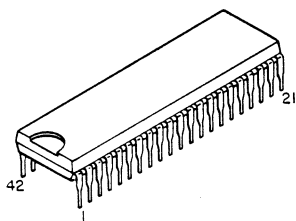
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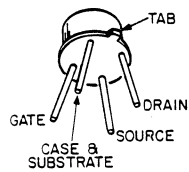
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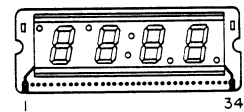
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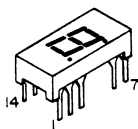
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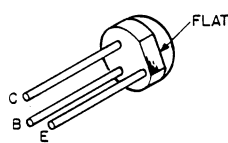
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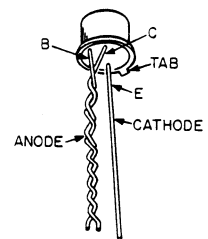
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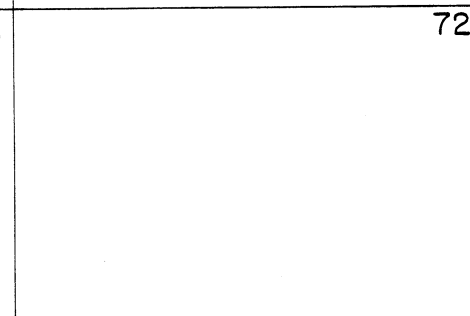
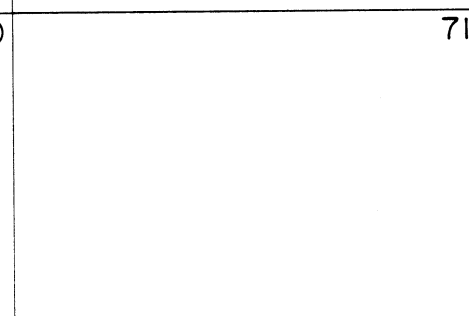
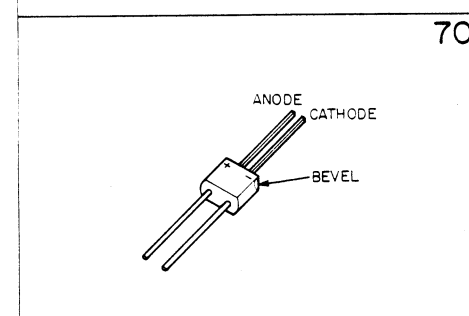
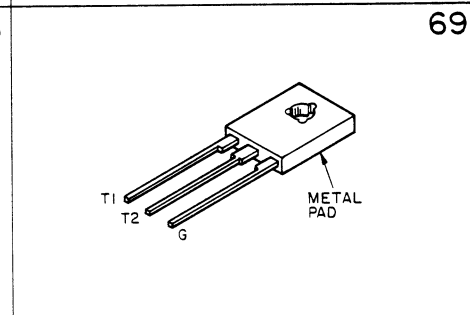
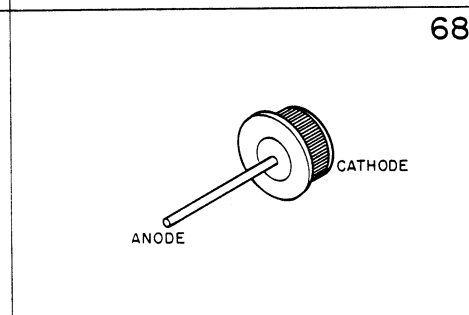
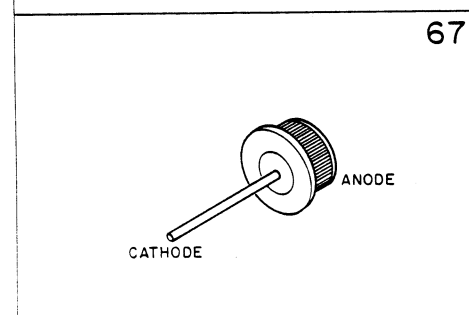
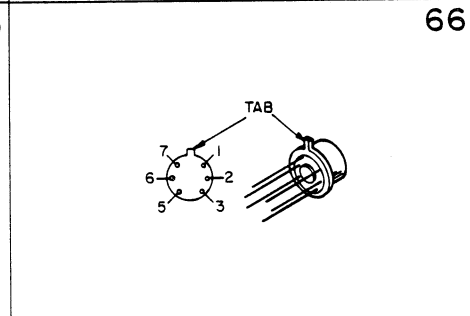
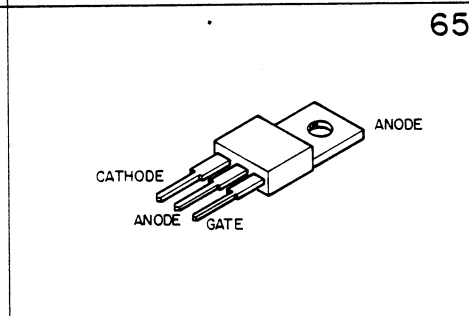
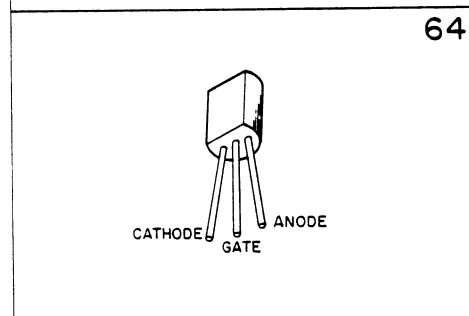
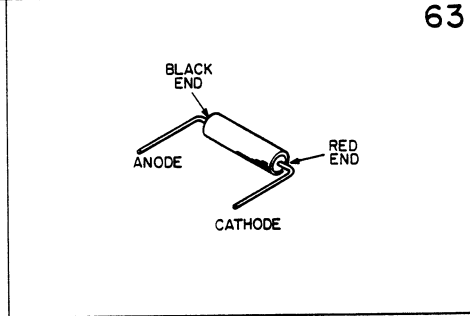
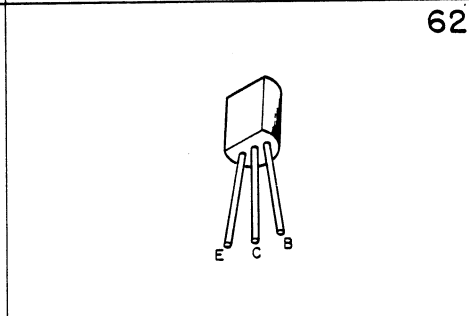
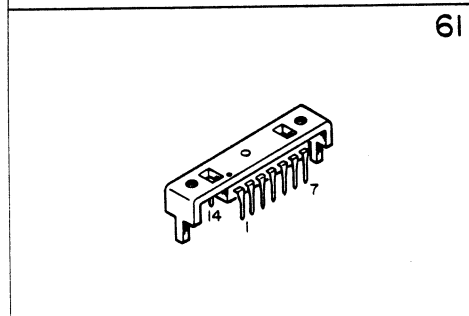
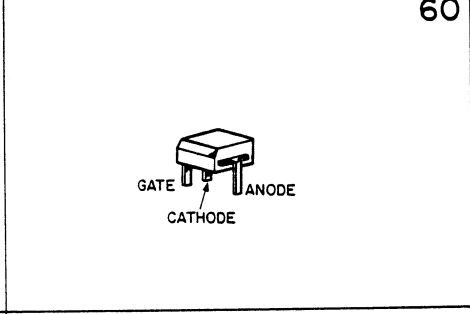
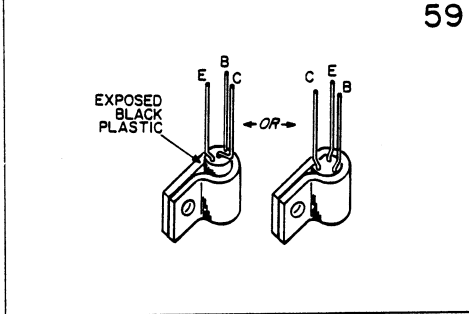
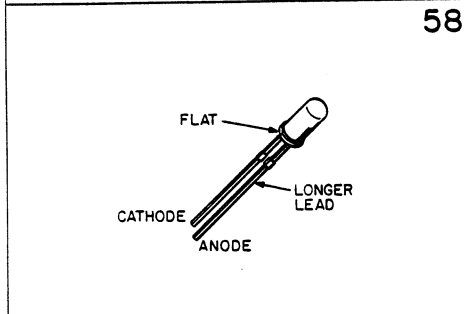
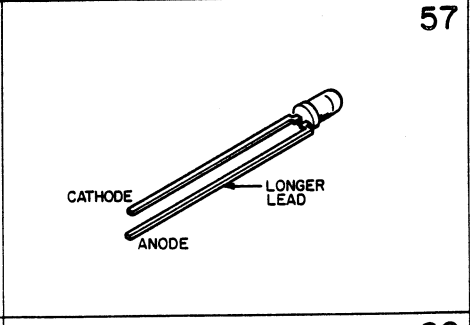
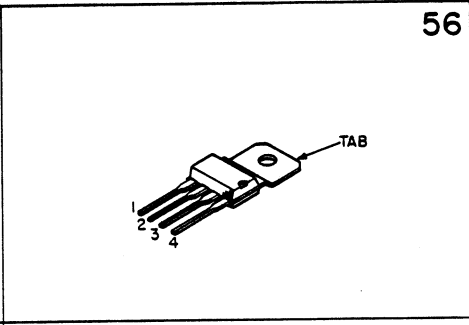
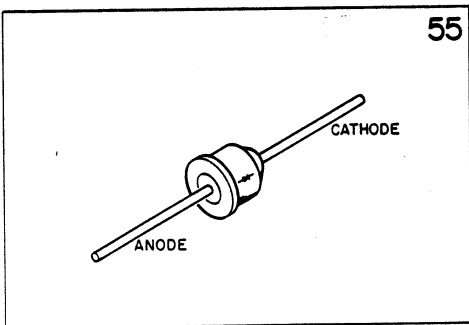


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