




2N1984-2N2079


TYPE	MATERIAL	POLARITY	REPLACE- MENT	PAGE NUMBER	USE	MAXIMUM RATINGS					ELECTRICAL CHARACTERISTICS												
						P _D @ 25°C	T _J °C	V _{CB} (volts)	V _{CE} - (volts)	Subscript	h _{FE} @ I _C		V _{CE(SAT)} @ I _C		f _T	Subscript	f _T		Subscript				
						Ref Point	°C	(volts)	(volts)		(min)	(max)	Units	(volts)	Units	Hz		Units	Units				
2N1984	S	N	2N2218	8-108	AFA	600M	A	150	50	25	0								35		40M	T	
2N1985	S	N	2N2218	8-108	AFA	600M	A	150	50	25	0							15		40M	T		
2N1986	S	N	2N2218	8-108	RFA	600M	A	150	50	25	0	60	240	150M	1.5	150M					40M	T	
2N1987	S	N	2N2218	8-108	RFA	600M	A	150	50	25	0	20	80	150M	1.5	150M					40M	T	
2N1988	S	N	2N2218A	8-114	VID	600M	A	150	100	45	0	35	120	30M	2.0	30M			20	E	40M	T	
2N1989	S	N	2N2218A	8-114	VID	600M	A	150	100	45	0	20	60	30M	2.0	30M			10	E	40M	T	
2N1990	S	N		8-104	IND	600M	A	150	100			20		30M	0.5	2.0M							
2N1991	S	P		8-90	RFA	600M	A	150	30	20	0	15	60	150M	1.5	150M						40M	T
2N1992	S	N			HSS	0.35W	A	200	15	15	0	30	120	1.0M	0.25	10M						300M	T
2N1993	G	N			MSS	150M	A	100	30	18	0	50	300	10M	0.2	10M						3.0M	T
2N1994	G	N			MSS	150M	A	85	30	15	0	15		10M	0.25	200M						3.0M	B
2N1995	G	N			MSS	150M	A	85	25	15	0	25		10M	0.25	200M						5.0M	B
2N1996	G	N			MSS	150M	A	85	20	15	0	35		10M	0.25	200M						8.0M	T
2N1997	G	P			MSS	250M	A	100	45	15	0	40	200	100M	0.2	10M						3.0M	B
2N1998	G	P			MSS	250M	A	100	35	15	0	70	225	100M	0.2	10M						5.6M	T
2N1999	G	P			MSS	250M	A	100	30	15	0	100	350	100M	0.2	10M						1.0M	T
2N2000	G	P			MSS	300M	A	100	50	15	0	50	300	100M	0.35	500M						2.0M	B
2N2001	G	P			MSS	300M	A	100	30	15	0	100		100M	0.2	100M						6.0M	B
2N2002	G	P			CHP	0.25W	A	200	30	5.0	0												
2N2003	S	P			CHP	0.25W	A	200	30	5.0	0												
2N2004	S	P			CHP	0.25W	A	175	50	15	0	12		1.0M					15	E	0.5M	B	
2N2005	S	P			CHP	0.25W	A	200	50	15	0												
2N2006	S	P			CHP	0.25W	A	200	60	35	0												
2N2007	S	F			CHP	0.25W	A	200	60	35	0												
2N2008	S	N	2N3500	8-232	AFA	800M	A	200	175	110	0	30	90	10M	2.5	25M			20	E	40M	T	
2N2009 thru 2N2014	Thyristors, see Table on Page 1-154																						
2N2015	S	N	2N3715	7-125	AFA	150W	C	200	100	50	0	15	50	5.0A	1.25	5.0A			12	E	12K	E	
2N2016	S	N	2N3715	7-125	AFA	150W	C	200	130	65	0	15	50	5.0A	1.25	5.0A			12	E	12K	E	
2N2017	S	S		7-125	AFA	1.0W	A	200	60	60	0	50	200	200M					30	E			
2N2018	S	N	2N3738	7-133	HFA	20W	C	175	150	150	V	20	60	0.5A	6.0	1.0A						2.0M	T
2N2019	S	N	2N3738	7-133	HFA	20W	C	175	150	200	V	20	60	0.5A	6.0	1.0A						2.0M	T
2N2020	S	N	2N3738	7-133	HFA	20W	C	175	150	125	0	40	90	0.5A	6.0	1.0A						3.0M	T
2N2021	S	N	2N3738	7-133	HFA	20W	C	175	200	140	0	40	90	0.5A	6.0	1.0A						3.0M	T
2N2022	G	F	2N3738	7-133	HSS	0.15W	A	100	15	12	S	25	150	10M	1.2	50M						250M	T
2N2023 thru 2N2031	Thyristors, see Table on Page 1-154																						
2N2032	S	N	2N3713	7-125	HFA	45W	C	200	45	45	0	20		2.0A	5.0	2.0A						3.0M	T
2N2033	S	N			PMS	5.0W	C	200	80	60	0	20	60	500M	0.4	500M						1.0M	T
2N2034	S	N			PMS	14W	C	200	80	60	0	20	60	1.0A	0.3	1.0A						1.0M	T
2N2035	S	N			PMS	17W	C	200	80	60	0	20	60	1.5A	0.45	1.5A						1.0M	T
2N2036	S	N			PMS	17.5W	C	200	80	60	0	20	60	2.0A	1.0	2.0A						1.0M	T
2N2038	S	N			RFA	0.6W	A	200	45	45	0	12	36	0.2A	6.0	0.2A						2.0M	T
2N2039	S	N			RFA	0.6W	A	200	75	75	0	12	36	0.2A	6.0	0.2A						2.0M	T
2N2040	S	N			RFA	0.6W	A	200	45	45	0	30	90	0.2A	6.0	0.2A						2.0M	T
2N2041	S	N			RFA	0.6W	A	200	75	75	0	30	90	0.2A	6.0	0.2A						2.0M	T
2N2042A	G	P		6-39	AFA	200M	A	100	105	105	S	20	50	5.0M	0.75	100M			20	E	0.5M	B	
2N2043A	G	P		6-39	AFA	200M	A	100	105	105	S	40	100	5.0M	0.75	100M			45	E	0.75M	B	
2N2044 thru 2N2047	Thyristors, see Table on Page 1-154																						
2N2048	G	P	2N2955	8-173	HSS	150M	A	100	20	15	0	50	300	10M	0.14	10M						150M	T
2N2048A	G	P			HSS	150M	A	100	30	20	0	50	300	10M	0.14	10M						7.5K	E
2N2049	G	N	2N219A	8-114	LNA	800M	A	200	75	50	R	100	300	150M	0.4	10M			75	E	50M	T	
2N2059	G	P			MSS	60M	A	100	10	8.0	S	20		10M	0.2	10M						50M	T
2N2060	S	N		11-6	DFA	500M	A	200	100	80	R	50	150	10M	1.2	50M			50	E	60M	T	
2N2060A	S	N		11-6	DFA	0.5W	A	200	100	60	O	50	150	10M	0.6	50M			50	E	60M	T	
2N2060B	S	N																					
2N2061	G	P	2N3611	7-118	SAC	40W	C	85	20	10	0	10	60	0.5A	2.0	0.5A						2.0K	E
2N2061A	G	P			PMS	90W	C	100	20	15	0	20	60	2.0A	1.0	5.0A						5.0K	E
2N2062	G	P	2N3611	7-118	SAC	40W	C	85	20	10	0	20	200	2.0A	1.0	2.0A						2.0K	E
2N2062A	G	P			PMS	90W	C	100	20	15	0	50	140	2.0A	0.7	5.0A						1.0K	E
2N2063	G	P	2N3611	7-118	SAC	35W	C	95	40	15	0	10	200	2.0A	2.0	2.0A						2.0K	E
2N2063A	G	P			PMS	90W	C	100	40	20	0	20	60	2.0A	1.0	5.0A						5.0K	E
2N2064	G	P	2N3611	7-118	SAC	35W	C	95	40	15	0	20	200	2.0A	1.0	2.0A						2.0K	E
2N2064A	G	P			PMS	90W	C	100	40	20	0	50	140	2.0A	0.7	5.0A						1.0K	E
2N2065	G	P	2N3615	7-121	SAC	35W	C	95	80	25	0	10	200	2.0A	2.0	2.0A						2.0K	E
2N2065A	G	P			PMS	90W	C	100	80	40	0	20	60	2.0A	1.0	5.0A						5.0K	E
2N2066	G	P	2N3615	7-121	SAC	35W	C	95	80	25	0	20	200	2.0A	1.0	2.0A						2.0K	E
2N2066A	G	P			PMS	90W	C	100	80	40	0	50	140	2.0A	0.7	5.0A						1.0K	E
2N2067	G	P	2N1536	7-60	SAC	28W	C	95	40	25	0	20	100	0.5A	0.7	1.0A						7.0K	E
2N2068	G	P	2N1531	7-60	SAC	28W	C	95	80	55	0	20	100	0.5A	0.7	1.0A						7.0K	E
2N2069	G	P	2N1539	7-60	SAC	70W	C	95	40	30	S	30	200	5.0A	1.5	12A						1.5K	E
2N2070	G	P	2N1541	7-60	SAC	70W	C	95	80	60	S	30	200	5.0A	1.5	12A						1.5K	E
2N2071	G	P	2N1539	7-60	SAC	70W	C	95	40	30	S	30	200	5.0A	1.5	12A						1.5K	E
2N2072	G	P	2N1539	7-60	SAC	70W	C	95	80	60	S	30	200	5.0A	1.5	12A						1.5K	E
2N2074 thru 2N2075	Thyristor, see Table on Page 1-154																						
2N2075A	G	P		7-75	LPA	170W	C	110	80	80	S	20	40	5.0A	0.7	12A						5.0K	E
2N2076	G	P		7-75	LPA	170W	C	110	80	80	S	20	40	5.0A	0.7	12A						5.0K	E
2N2076A	G	P		7-75	LPA	170W	C	110	70	70	S	20	40	5.0A	0.7	12A						5.0K	E
2N2077	G	P		7-75	LPA	170W	C	110	70</														


GERMANIUM POWER TRANSISTOR SELECTOR GUIDE (continued)


10 - AMP HIGH-VOLTAGE LOW-SATURATION SWITCH P ₀ = 85 W f _r = 0.7 MHz *P ₀ = 56 W *f _r = 1.0 MHz		h_{FE} $I_C = 3 \text{ A}$ $V_{CE} = 2 \text{ V}$	V_{CEO}	80 V	120 V	160 V	V_{CES}	
			V_{CE}	80 V	120 V	160 V	200 V	320 V
		20-50 20 min *		2N2526	2N2527	2N2528	MP3730*	MP3731*


15 - AMP GENERAL PURPOSE SWITCH AND AMPLIFIER P ₀ = 170 W f _r = 0.3 MHz		h_{FE} $I_C = 5 \text{ A}$ $V_{CE} = 2 \text{ V}$	V_{CES}	40 V	50 V	70 V	80 V	
			V_{CE}	40 V	50 V	70 V	80 V	
		20-40		2N2078	2N2077	2N2076	2N2075	
		35-70		2N2082	2N2081	2N2080	2N2079	

15 - AMP GENERAL PURPOSE SWITCH AND AMPLIFIER P ₀ = 150 W f _r = 0.3 MHz		h_{FE} $I_C = 5 \text{ A}$ $V_{CE} = 2 \text{ V}$	V_{CES}	40 V	45 V	50 V	70 V	80 V
			V_{CE}	40 V	50 V	60 V	80 V	100 V
		20-40		2N441	2N442	2N443		
		25-50				2N174	2N1100	
		35-70		2N277	2N278	2N173	2N1099	

15 - AMP HIGH-FREQUENCY SWITCH AND AMPLIFIER P ₀ = 106 W		h_{FE} $I_C = 10 \text{ A}$ $V_{CE} = 2 \text{ V}$	V_{CES}	30 V	45 V	60 V	75 V	
			V_{CE}	40 V	60 V	80 V	100 V	
		10-30 f _r = 0.55 MHz		2N1549	2N1550	2N1551	2N1552	
		30-60 f _r = 0.4 MHz		2N1553	2N1554	2N1555	2N1556	
		50-100 f _r = 0.4 MHz		2N1557	2N1558	2N1559	2N1560	

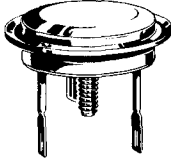
20 - AMP HIGH-SPEED SWITCH P ₀ = 85 W f _r = 18 MHz		h_{FE} $I_C = 10 \text{ A}$ $V_{CE} = 2 \text{ V}$	V_{CEO}	50 V		75 V		100 V
			V_{CE}	80 V		120 V		140 V
		25-100		2N2832		2N2833		2N2834

25 - AMP HIGH DC GAIN SWITCH P ₀ = 106 W f _r = 0.4 MHz		h_{FE} $I_C = 25 \text{ A}$ $V_{CE} = 1 \text{ V}$	V_{CES}	35 V		60 V		75 V
			V_{CE}	50 V		80 V		100 V
		15-65		2N1162		2N1164		2N1166
				2N1163†		2N1165†		2N1167†

25 - AMP HIGH DC GAIN LOW-SATURATION SWITCH P ₀ = 75 W f _r = 10 MHz		h_{FE} $I_C = 5 \text{ A}$ $V_{CE} = 2 \text{ V}$	$V_{CE(sat)}$ $I_C = 25 \text{ A}$ $I_E = 2.5 \text{ A}$		0.5 V			
			V_{CE}		15 V			
		200-800				2N2912		

2N2075 thru 2N2082 (GERMANIUM)
2N2075A thru 2N2082A
2N2079A JAN AVAILABLE

$V_{CB} = 40-80V$
 $I_C = 15 A$
 $P_D = 170W$



PNP germanium power transistors for high-power applications in high-reliability equipment.

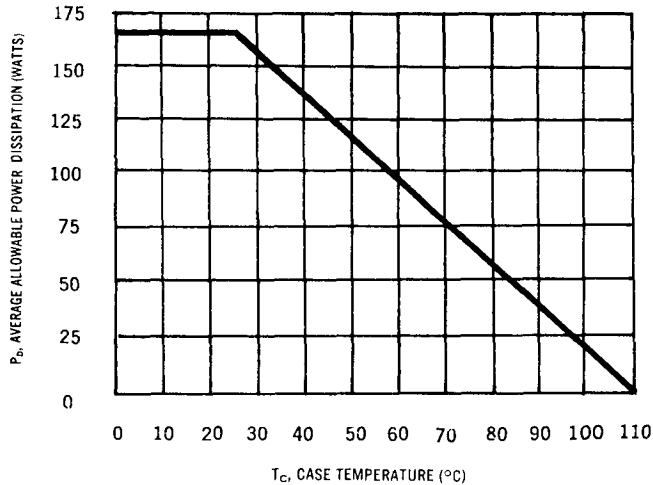
CASE 5
(TO-36)

MAXIMUM RATINGS

Rating	Symbol	2N2078 2N2082	2N2077 2N2081	2N2076 2N2080	2N2075 2N2079	Unit
Collector-Emitter Voltage	V_{CEO}	25	45	55	65	Vdc
Collector-Emitter Voltage	V_{CES}	40	50	70	80	Vdc
Collector-Base Voltage	V_{CB}	40	50	70	80	Vdc
Emitter-Base Voltage	V_{EB}	20	25	35	40	Vdc
Collector Current	I_C	←————— 15 —————→				Adc
Total Device Dissipation @ $T_C = 25^\circ C$	P_D	←————— 170 —————→				Watts
Operating Junction Temperature Range	T_J	←————— -65 to +110 —————→				

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	0.5	$^\circ C/W$



POWER-TEMPERATURE DERATING CURVE

The maximum average power is related to maximum junction temperature by the thermal resistance factor.

This curve has a value of 170 Watts at case temperatures of $25^\circ C$ and is 0 Watts at $110^\circ C$ with a linear relation between the two temperatures such that:

$$\text{allowable } P_D = \frac{110^\circ - T_C}{0.5}$$

2N2075 thru 2N2082 (continued)

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ Adc}$, $I_B = 0$)	BV_{CEO}	25	-	Vdc	
2N2078, 2N2082		45	-		
2N2077, 2N2081		55	-		
2N2076, 2N2080		65	-		
2N2075, 2N2079					
Collector-Emitter Breakdown Voltage* ($I_C = 300 \text{ mA}$, $V_{BE} = 0$)	BV_{CES}	40	-	Vdc	
2N2078, 2N2082		50	-		
2N2077, 2N2081		70	-		
2N2076, 2N2080		80	-		
2N2075, 2N2079					
Floating Potential ($V_{CB} = 40 \text{ Vdc}$, $I_E = 0$)	V_{EBF}	-	1.0	Vdc	
2N2078, 2N2082		-	1.0		
($V_{CB} = 50 \text{ Vdc}$, $I_E = 0$)		2N2077, 2N2081	-		1.0
($V_{CB} = 70 \text{ Vdc}$, $I_E = 0$)		2N2076, 2N2080	-		1.0
($V_{CB} = 80 \text{ Vdc}$, $I_E = 0$)	2N2075, 2N2079	-	1.0		
Collector Cutoff Current ($V_{CB} = 2.0 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	-	0.2	mA	
($V_{CB} = V_{CB(max)}$, $V_{EB} = 1.5 \text{ Vdc}$)		-	4.0		
($V_{CB} = V_{CB(max)}$, $I_E = 0$, $T_C = +71^\circ\text{C}$)		-	15		
Emitter Cutoff Current ($V_{BE} = V_{BE(max)}$, $I_C = 0$)	I_{EBO}	-	4.0	mA	
($V_{BE} = V_{BE(max)}$, $I_C = 0$, $T_C = +71^\circ\text{C}$)		-	15		

ON CHARACTERISTICS

DC Current Gain ($I_C = 1.2 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$)	2N2075 thru 2N2078 2N2079 thru 2N2082	h_{FE}	25	100	-
($I_C = 5.0 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$)			40	160	
($I_C = 5.0 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$, $T_C = -55^\circ\text{C}$)			20	40	
($I_C = 12 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$)			35	70	
			15	-	
Collector-Emitter Saturation Voltage ($I_C = 13 \text{ Adc}$, $I_B = 2.0 \text{ Adc}$)	2N2075 & 76, 2N2079 & 80 2N2077 & 78, 2N2081 & 82	$V_{CE(sat)}$	-	0.7	Vdc
			-	0.9	
Base-Emitter On Voltage ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 12 \text{ Vdc}$)		$V_{BE(on)}$	-	0.9	Vdc

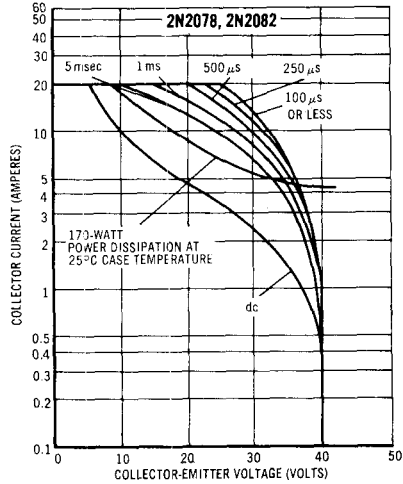
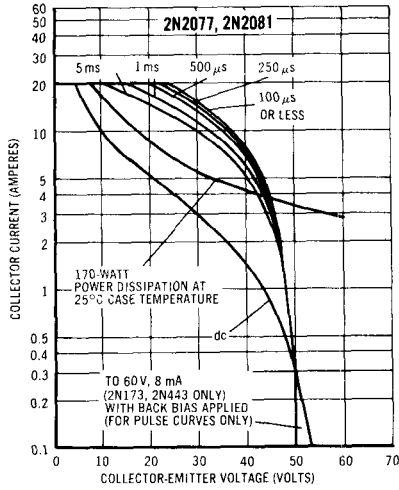
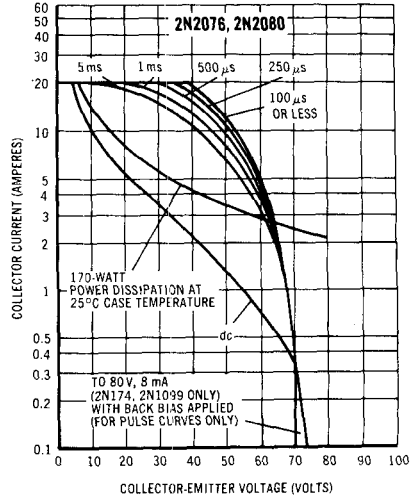
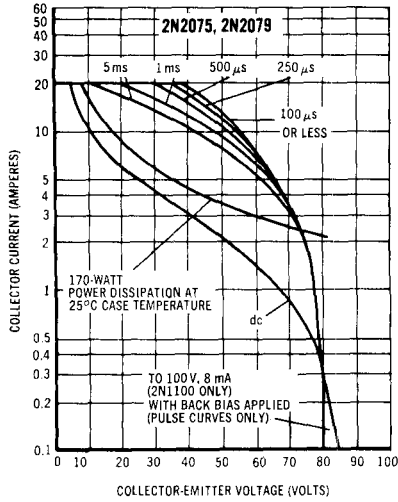
DYNAMIC CHARACTERISTICS

Common-Emitter Cutoff Frequency ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 6.0 \text{ Vdc}$)	$f_{\alpha e}$	5.0	-	kHz
Rise Time ($V_{CE} = 12 \text{ Vdc}$, $I_{C(on)} = 12 \text{ Adc}$, $I_B = 2.0 \text{ Adc}$)	t_r	Typ		μs
2N2075 thru 2N2078		9.0		
2N2079 thru 2N2082		6.0		
Fall Time ($V_{BE} = 6.0 \text{ Vdc}$, $I_{C(off)} = 0$, $R_{BE} = 10 \text{ ohms}$)	t_f	12		μs
2N2075 thru 2N2078		13		
2N2079 thru 2N2082				

*To avoid excessive heating of collector junction, perform this test with a sweep method.

2N2075 thru 2N2082 (continued)

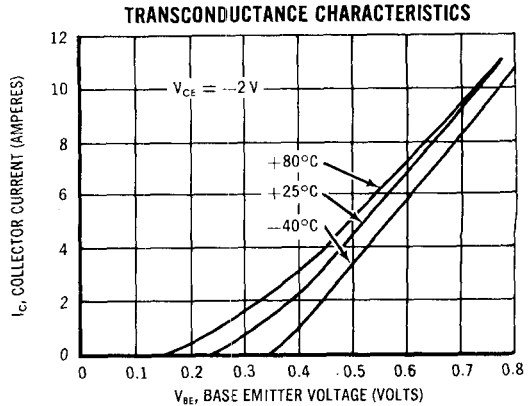
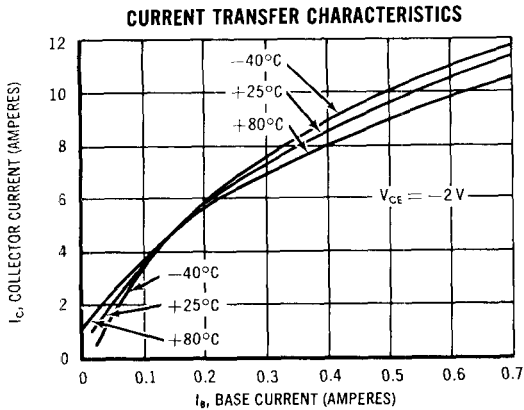
SAFE OPERATING AREAS



The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not go into secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a collector-emitter short.

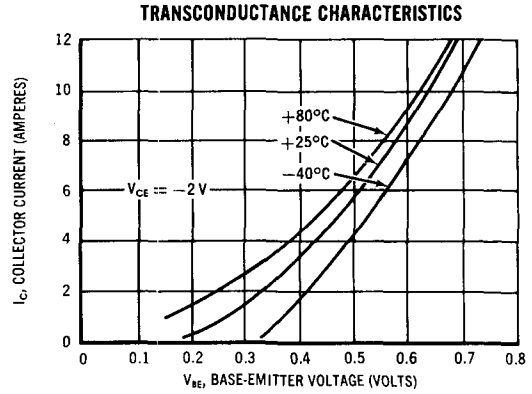
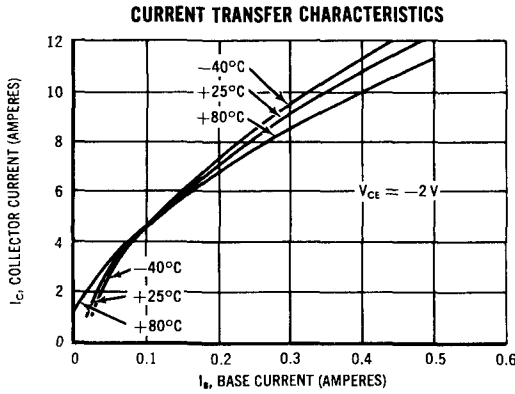
(Duty cycle of the excursions make no significant change in these safe areas.) To insure operation below the maximum T_J , the power-temperature derating curve must be observed for both steady state and pulse power conditions.

2N2075-2N2078



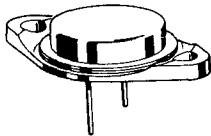
2N2075 thru 2N2082 (continued)

2N2079-2N2082



2N2137 thru 2N2146 (GERMANIUM)
2N2137A thru 2N2146A

$V_{CB} = 30-90\text{ V}$
 $I_C = 3\text{ A}$
 $P_D = 70\text{ W}$



CASE 3, 4
 (TO-3, 41)

PNP germanium industrial power transistors for driver applications in high reliability equipment.

For units with solder lugs attached, specify devices MP2137A etc. (TO-41 package)

MAXIMUM RATINGS

Apply also to standard, non-A series

Rating	Symbol	2N2137A 2N2142A	2N2138A 2N2143A	2N2139A 2N2144A	2N2140A 2N2145A	2N2141A 2N2146A	Unit
Collector-Base Voltage	V_{CB}	30	45	60	75	90	Vdc
Collector-Emitter Voltage	V_{CES}	30	45	60	75	90	Vdc
Collector-Emitter Voltage	V_{CEO}	20	30	45	60	65	Vdc
Emitter-Base Voltage	V_{EB}	15	25	30	40	45	Vdc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	<div style="display: flex; align-items: center;"> <div style="width: 100px; border-bottom: 1px solid black; margin-right: 5px;"></div> <div style="width: 100px; border-bottom: 1px solid black; margin-right: 5px;"></div> <div style="width: 100px; border-bottom: 1px solid black; margin-right: 5px;"></div> <div style="width: 100px; border-bottom: 1px solid black; margin-right: 5px;"></div> <div style="width: 100px; border-bottom: 1px solid black; margin-right: 5px;"></div> <div style="width: 100px; border-bottom: 1px solid black; margin-right: 5px;"></div> </div>					Watts $\text{W}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	<div style="display: flex; align-items: center; justify-content: center;"> <div style="width: 100%; border-bottom: 1px solid black; margin-right: 5px;"></div> </div>					$^\circ\text{C}$