2N1042 thru 2N1045 (GERMANIUM)
2N2560 thru 2N2567

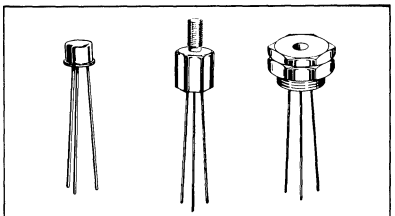
PNP GERMANIUM MEDIUM POWER TRANSISTORS

. . . designed for relay drivers, pulse amplifiers, audio amplifiers and high-current switching applications.

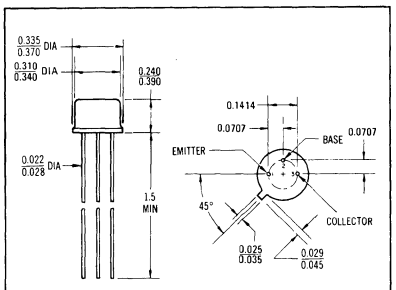
- High Current Capability – I_C = 3.5 Amperes
- Guaranteed Excellent Collector-Emitter Sustaining Voltage
- 20-Watt Power Dissipation at 25°C Case Temperature
- 100°C Maximum Junction Temperature

PNP GERMANIUM POWER TRANSISTORS

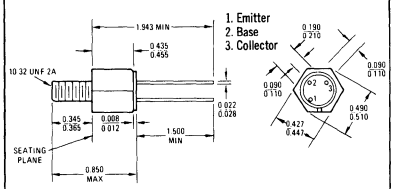
40–100 VOLTS
20 WATTS



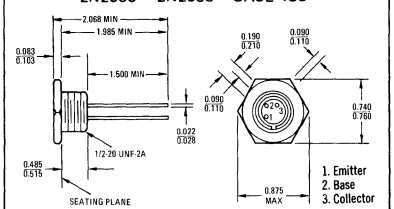
CASE 180 CASE 183 CASE 184



2N2564 – 2N2567 CASE 180



2N2560 – 2N2563 CASE 183



2N1042 – 2N1045 CASE 184
Collector Connected to Case
(All Types)

*MAXIMUM RATINGS

Rating	Symbol	2N1042 2N2560 2N2564	2N1043 2N2561 2N2565	2N1044 2N2562 2N2566	2N1045 2N2563 2N2567	Unit
Collector-Emitter Voltage	V_{CEO}	30	40	50	60	Vdc
Collector-Base Voltage	V_{CB}	40	60	80	100	Vdc
Emitter-Base Voltage	V_{EB}	← 20 →				Vdc
Collector Current – Continuous	I_C	← 3.5 →				Adc
Base Current – Continuous	I_B	← 1.0 →				Adc
Total Device Dissipation @ T_A = 25°C	P_D	← 450 →				mW
Derate above 25°C		← 6.0 →				mW/°C
Total Device Dissipation @ T_C = 25°C	P_D	← 20 →				Watts
Derate above 25°C (Note 1)		← 0.267 →				W/°C
**Operating and Storage Junction Temperature Range	T_J,T_{stg}	← -65 to +100 →				°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.75	°C/W

*Indicates JEDEC Registered Data.

Note 1: Case Temperature shall be measured 0.100 ± 0.010 inches above the seating plane.

**Motorola guarantees this data in addition to the JEDEC Registered Data shown.

2N1042 thru 2N1045/2N2560 thru 2N2567 (continued)

*ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage		$V_{CEO(sus)}$			Vdc
(I_C = 100 mAdc, I_B = 0)	2N1042,2N2560,2N2564		30	–	
	2N1043,2N2561,2N2565		40	–	
	2N1044,2N2562,2N2566		50	–	
	2N1045,2N2563,2N2567		60	–	
Collector Cutoff Current		I_{CEO}			mAdc
(V_{CE} = 15 Vdc, I_B = 0)	2N1042,2N2560,2N2564		–	25	
(V_{CE} = 20 Vdc, I_B = 0)	2N1043,2N2561,2N2565		–	20	
(V_{CE} = 25 Vdc, I_B = 0)	2N1044,2N2562,2N2566		–	20	
(V_{CE} = 30 Vdc, I_B = 0)	2N1045,2N2563,2N2567		–	20	
Collector-Emitter Cutoff Current		I_{CEX}			mAdc
(V_{CE} = 40 Vdc, $V_{BE(off)}$ = 0.2 Vdc)	2N1042,2N2560,2N2564		–	0.65	
(V_{CE} = 60 Vdc, $V_{BE(off)}$ = 0.2 Vdc)	2N1043,2N2561,2N2565		–	0.65	
(V_{CE} = 80 Vdc, $V_{BE(off)}$ = 0.2 Vdc)	2N1044,2N2562,2N2566		–	0.65	
(V_{CE} = 100 Vdc, $V_{BE(off)}$ = 0.2 Vdc)	2N1045,2N2563,2N2567		–	0.65	
(V_{CE} = 20 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = 85°C)	2N1042,2N2560,2N2564		–	5.0	
(V_{CE} = 30 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = 85°C)	2N1043,2N2561,2N2565		–	5.0	
(V_{CE} = 40 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = 85°C)	2N1044,2N2562,2N2566		–	5.0	
(V_{CE} = 50 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = 85°C)	2N1045,2N2563,2N2567		–	5.0	
Collector Cutoff Current		I_{CBO}			μAdc
(V_{CB} = 20 Vdc, I_E = 0)	2N1042,2N2560,2N2564		–	125	
(V_{CB} = 30 Vdc, I_E = 0)	2N1043,2N2561,2N2565		–	125	
(V_{CB} = 40 Vdc, I_E = 0)	2N1044,2N2562,2N2566		–	125	
(V_{CB} = 50 Vdc, I_E = 0)	2N1045,2N2563,2N2567		–	125	
**(V_{CB} = 40 Vdc, I_E = 0)	2N1042,2N2560,2N2564		–	750	
**(V_{CB} = 60 Vdc, I_E = 0)	2N1043,2N2561,2N2565		–	750	
**(V_{CB} = 80 Vdc, I_E = 0)	2N1044,2N2562,2N2566		–	750	
**(V_{CB} = 100 Vdc, I_E = 0)	2N1045,2N2563,2N2567		–	750	
Emitter Cutoff Current		I_{EBO}	–	650	μAdc
(V_{BE} = 20 Vdc, I_C = 0)					
ON CHARACTERISTICS					
DC Current Gain		h_{FE}			–
(I_C = 50 mAdc, V_{CE} = 0.5 Vdc)			50	–	
(I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)			–	150	
(I_C = 3.0 Adc, V_{CE} = 1.0 Vdc)			20	60	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 1.0 Adc, I_B = 100 mAdc)			–	0.25	
(I_C = 3.0 Adc, I_B = 300 mAdc)			–	0.75	
Base-Emitter Input Voltage		V_{BE}	–	1.5	Vdc
(I_C = 3.0 Adc, V_{CE} = 1.0 Vdc)					
SMALL-SIGNAL CHARACTERISTICS					
Small-Signal Current Gain		h_{fe}	25	100	–
(I_C = 500 mAdc, V_{CE} = 1.5 Vdc, f = 1.0 kHz)					
Small-Signal Current Gain		$\|h_{fe}\|$	2.0	–	–
(I_C = 500 mAdc, V_{CE} = 1.5 Vdc, f = 125 kHz)					

*Indicates JEDEC Registered Data.

**Motorola Guarantees this data in addition to the JEDEC Registered Data Shown.