

2N1038 thru 2N1041 (GERMANIUM)

2N2552 thru 2N2559

PNP GERMANIUM MEDIUM POWER TRANSISTORS

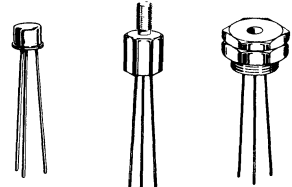
... designed for relay drivers, pulse amplifiers, audio amplifiers and high-current switching applications.

- High Current Capability – $I_C = 3.0$ 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

*MAXIMUM RATINGS

Rating	Symbol	2N1038 2N2552 2N2556	2N1039 2N2553 2N2557	2N1040 2N2554 2N2558	2N1041 2N2555 2N2559	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	← 3.0 →				Adc
Base Current – Continuous	I_B	← 1.0 →				Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	← 450 →				mW
		← 6.0 →				mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C (Note 1)	P_D	← 20 →				Watts
		← 0.267 →				W/°C
**Operating and Storage Junction Temperature Range	T_J, T_{stg}	← -65 to +100 →				°C

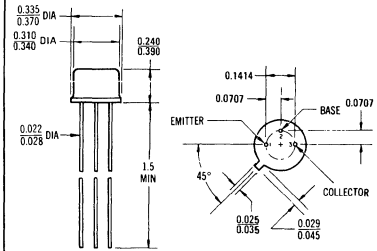
THERMAL CHARACTERISTICS

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

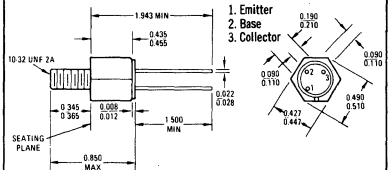
*Indicates JEDEC Registered Data.

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

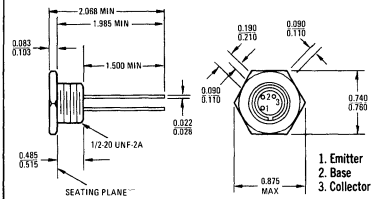
**Motorola guarantees this data in addition to the JEDEC Registered Data shown.



2N1038–2N1041 CASE 180



2N2552–2N2555 CASE 183



2N2556–2N2559 CASE 184
Collector Connected to Case
(All Types)

2N1038 thru 2N1041/2N2552 thru 2N2559 (continued)

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (I _C = 100 mA _{dc} , I _B = 0)	V _{CEO(sus)}	30 40 50 60	- - - -	V _{dc}
Collector Cutoff Current (V _{CE} = 15 V _{dc} , I _B = 0) (V _{CE} = 20 V _{dc} , I _B = 0) (V _{CE} = 25 V _{dc} , I _B = 0) (V _{CE} = 30 V _{dc} , I _B = 0)	I _{CEO}	- - - -	25 20 20 20	mA _{dc}
Collector-Emitter Cutoff Current (V _{CE} = 40 V _{dc} , V _{BE(off)} = 0.2 V _{dc}) (V _{CE} = 60 V _{dc} , V _{BE(off)} = 0.2 V _{dc}) (V _{CE} = 80 V _{dc} , V _{BE(off)} = 0.2 V _{dc}) (V _{CE} = 100 V _{dc} , V _{BE(off)} = 0.2 V _{dc}) (V _{CE} = 20 V _{dc} , V _{BE(off)} = 0.2 V _{dc} , T _C = 85°C) (V _{CE} = 30 V _{dc} , V _{BE(off)} = 0.2 V _{dc} , T _C = 85°C) (V _{CE} = 40 V _{dc} , V _{BE(off)} = 0.2 V _{dc} , T _C = 85°C) (V _{CE} = 50 V _{dc} , V _{BE(off)} = 0.2 V _{dc} , T _C = 85°C)	I _{CEX}	- - - - - - - -	0.65 0.65 0.65 0.65 5.0 5.0 5.0 5.0	mA _{dc}
Collector Cutoff Current (V _{CB} = 20 V _{dc} , I _E = 0) (V _{CB} = 30 V _{dc} , I _E = 0) (V _{CB} = 40 V _{dc} , I _E = 0) (V _{CB} = 50 V _{dc} , I _E = 0) **(V _{CB} = 40 V _{dc} , I _E = 0) **(V _{CB} = 60 V _{dc} , I _E = 0) **(V _{CB} = 80 V _{dc} , I _E = 0) **(V _{CB} = 100 V _{dc} , I _E = 0)	I _{CBO}	- - - - - - - -	125 125 125 125 750 750 750 750	μA _{dc}
Emitter Cutoff Current (V _{BE} = 20 V _{dc} , I _C = 0)	I _{EBO}	-	650	μA _{dc}
ON CHARACTERISTICS				
DC Current Gain (I _C = 50 mA _{dc} , V _{CE} = 0.5 V _{dc}) (I _C = 1.0 A _{dc} , V _{CE} = 0.5 V _{dc})	h _{FE}	33 20	200 60	-
Collector-Emitter Saturation Voltage (I _C = 1.0 A _{dc} , I _B = 100 mA _{dc})	V _{CE(sat)}	-	0.25	V _{dc}
Base-Emitter Input Voltage (I _C = 1.0 A _{dc} , V _{CE} = 0.5 V _{dc})	V _{BE}	-	1.0	V _{dc}
SMALL-SIGNAL CHARACTERISTICS				
Small-Signal Current Gain (I _C = 500 mA _{dc} , V _{CE} = 1.5 V _{dc} , f = 1.0 kHz)	h _{fe}	18	72	-
Small-Signal Current Gain (I _C = 500 mA _{dc} , V _{CE} = 1.5 V _{dc} , f = 112.5 kHz)	h _{fe}	2.0	-	-

*Indicates JEDEC Registered Data.

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