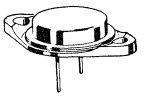
2N5155 (GERMANIUM)

PNP GERMANIUM POWER TRANSISTORS

. . . designed for high-current switching applications requiring low saturation voltages, fast switching times and above average Collector-Emitter Sustaining capability.

- Alloy Diffused Epitaxial Construction
- Low Saturation Voltages —
  $V_{CE(sat)}$ = 0.9 Vdc (Max) @ I_C = 25 Adc
  $V_{BE(sat)}$ = 1.4 Vdc (Max) @ I_C = 25 Adc
- DC Current Gain —
  h_{FE} = 25 (Min) @ I_C = 8.0 Adc

25 AMPERE
PNP ADE GERMANIUM POWER TRANSISTOR
140 VOLTS
106 WATTS



*MAXIMUM RATINGS

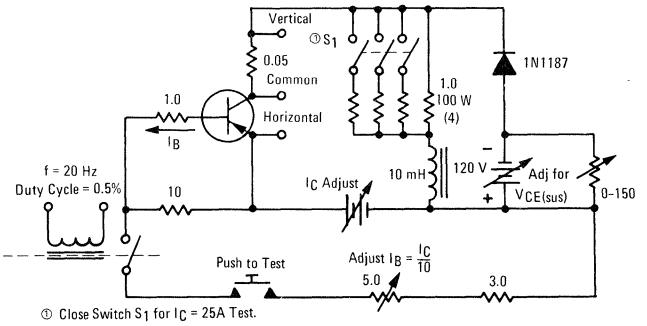
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	120	Vdc
Collector-Base Voltage	V_{CB}	140	Vdc
Emitter-Base Voltage	V_{EB}	1.5	Vdc
Collector Current - Continuous ** - Continuous - Peak	I_C	15 25 25	Adc
Base Current - Continuous	I_B	5.0	Adc
**Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	106 1.25	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +110	°C

THERMAL CHARACTERISTICS

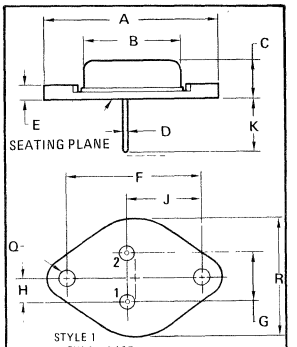
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	0.8	°C/W

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

FIGURE 1 — SUSTAINING VOLTAGE TEST CIRCUIT



① Close Switch S_1 for I_C = 25A Test.



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	–	39.37	–	1.550
B	–	21.08	–	0.830
C	–	7.62	–	0.300
D	1.22	1.32	0.048	0.052
E	–	3.43	–	0.135
F	29.90	30.40	1.177	1.197
G	10.67	11.18	0.420	0.440
H	5.33	5.59	0.210	0.220
J	16.64	17.15	0.655	0.675
K	8.13	10.67	0.320	0.420
Q	3.84	4.09	0.151	0.161
R	–	26.67	–	1.050

Collector connected to case
CASE 11A

2N5155 (continued)

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
*Collector-Emitter Breakdown Voltage (I_C = 100 mAdc, I_B = 0)	BV_{CEO}	120	-	Vdc
*Collector-Emitter Sustaining Voltage (See Figure 1) (I_C = 8.0 Adc, R_{EB} = 10 Ohms)	$V_{CEO(sus)}$	120	-	Vdc
(I_C = 25 Adc, R_{EB} = 10 Ohms)		80	-	
*Collector Cutoff Current (V_{CE} = 140 Vdc, $V_{BE(off)}$ = 0.2 Vdc)	I_{CEX}	-	10	mAdc
(V_{CE} = 140 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = 85°C)		-	25	
Collector Cutoff Current (V_{CB} = 2.0 Vdc, I_E = 0)	I_{CBO}	-	200	μAdc
*Emitter Cutoff Current (V_{EB} = 1.5 Vdc, I_C = 0)	I_{EBO}	-	500	mAdc
ON CHARACTERISTICS				
*DC Current Gain (I_C = 8.0 Adc, V_{CE} = 2.0 Vdc)	h_{FE}	25	100	-
*Collector-Emitter Saturation Voltage (I_C = 25 Adc, I_B = 2.5 Adc)	$V_{CE(sat)}$	-	0.9	Vdc
*Base-Emitter Saturation Voltage (I_C = 25 Adc, I_B = 2.5 Adc)	$V_{BE(sat)}$	-	1.4	Vdc
Pulse Energy Test (Note 1) (See Figure 2) (I_C = 4.2 Adc, V_{CE} = 30 Vdc)	PET	1.26	-	Joule
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product (I_C = 5.0 Adc, V_{CE} = 2.0 Vdc, f = 50 kHz)	f_T	100	-	kHz
SWITCHING CHARACTERISTICS				
Rise Time (V_{CC} = -12 Vdc, I_C = 10 Adc, I_{B1} = 1.0 Adc, I_{B2} = 1.0 Adc) (See Figure 3)	t_r	-	18	μs
Storage Time	t_s	-	12	μs
Fall Time	t_f	-	18	μs

*Indicates JEDEC Registered Data.

Note 1: Pulse Test: Pulse Width = 10 ms, Duty Cycle = 2.5%.

FIGURE 2 – PULSE ENERGY TEST CIRCUIT

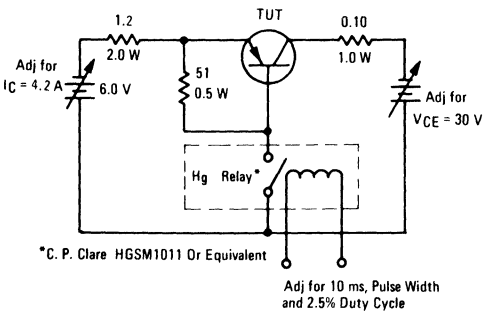
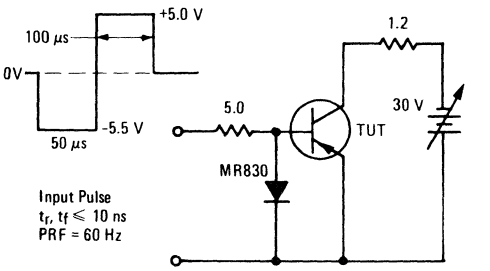


FIGURE 3 – SWITCHING TIME TEST CIRCUIT



2N5157

For Specifications, See 2N3902 Data, Volume I.