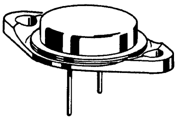
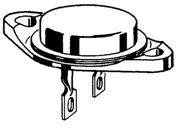
2N1529 thru 2N1538 (GERMANIUM)
2N1529A thru 2N1532A, 2N1534A thru 2N1537A

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



CASE 11
(TO-3)



CASE 4-04
(TO-41)

For units with solder lugs attached, specify devices MP1529, A etc. (TO-41 package)

MAXIMUM RATINGS

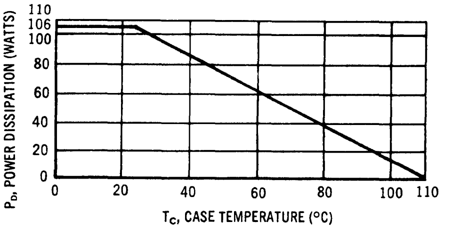
Rating	Symbol	2N1529 2N1534	2N1530 2N1535	2N1531 2N1536	2N1532 2N1537	2N1533 2N1538	Units
Collector-Emitter Voltage	V_{CEX}	40	60	80	100	120	Vdc
Collector-Emitter Voltage	V_{CES}	30	45	60	75	90	Vdc
Collector-Emitter Voltage	V_{CEO}	20	30	40	50	60	Vdc
Collector-Base Voltage	V_{CB}	40	60	80	100	120	Vdc
Emitter -Base Voltage	V_{EB}	20	30	40	50	60	Vdc
Collector Current (Continuous)	I_C			5.0			Amp
Collector Current (Peak)	I_C			10			Amp
Junction Temperature Range	T_J			-65 to +110			^{o}C
Total Device Dissipation (25^{o}C Case Temperature)	P_D			106			Watts
Thermal Resistance	θ_{JC}			0.8			$^{o}C/W$

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise specified.)

Characteristics apply to corresponding "A" type numbers also.

Characteristic		Symbol	Min	Max	Unit
Collector-Base Cutoff Current		I_{CBO1}			mA
(V_{CB} = 25V)	2N1529, 2N1534		—	2.0	
(V_{CB} = 40V)	2N1530, 2N1535		—	2.0	
(V_{CB} = 55V)	2N1531, 2N1536		—	2.0	
(V_{CB} = 65V)	2N1532, 2N1537		—	2.0	
(V_{CB} = 80V)	2N1533, 2N1538		—	2.0	
Collector-Base Cutoff Current		I_{CBO}			mA
(V_{CB} = 2V)			—	0.2	
(V_{CB} = 1 2 BV_{CES} rating; T_C = +90°C)			—	20	
Emitter-Base Cutoff Current		I_{EBO}			mA
(V_{EB} = 12V)			—	0.5	
Collector-Emitter Breakdown Voltage		BV_{CES}			volts
(I_C = 500 mA, V_{EB} = 0)	2N1529, 2N1534		30	—	
	2N1530, 2N1535		45	—	
	2N1531, 2N1536		60	—	
	2N1532, 2N1537		75	—	
	2N1533, 2N1538		90	—	
Collector-Emitter Leakage Current		I_{CEX}			mA
(V_{BE} = 1V, V_{CE} @ rated BV_{CBO})			—	20	
Collector-Emitter Breakdown Voltage		BV_{CEO}			volts
(I_C = 500 mA, I_B = 0)	2N1529, 2N1534		20	—	
	2N1530, 2N1535		30	—	
	2N1531, 2N1536		40	—	
	2N1532, 2N1537		50	—	
	2N1533, 2N1538		60	—	
Collector-Base Breakdown Voltage		BV_{CBO}			volts
(I_C = 20 mA)	2N1529, 2N1534		40	—	
	2N1530, 2N1535		60	—	
	2N1531, 2N1536		80	—	
	2N1532, 2N1537		100	—	
	2N1533, 2N1538		120	—	
Current Gain		h_{FE1}			—
(V_{CE} = 2V, I_C = 3A)	2N1529 - 2N1533		20	40	
	2N1534 - 2N1538		35	70	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			volts
(I_C = 3A, I_B = 300 mA)	2N1529 - 2N1533		—	1.7	
	2N1534 - 2N1538		—	1.5	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			volts
(I_C = 3A, I_B = 300 mA)	2N1529 - 2N1533		—	1.5	
	2N1534 - 2N1538		—	1.2	
Transconductance		g_{FE}			mhos
(V_{CE} = 2V, I_C = 3A)	2N1529 - 2N1533		1.2	—	
	2N1534 - 2N1538		1.5	—	

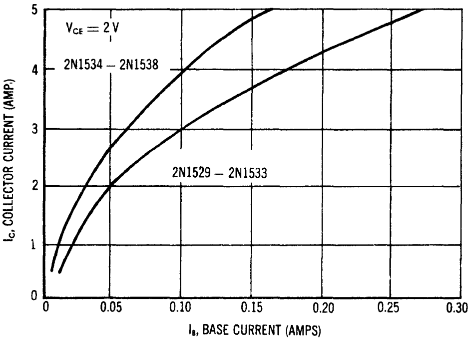
POWER-TEMPERATURE DERATING CURVE



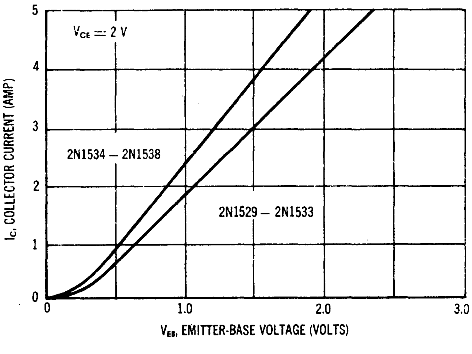
The maximum continuous power is related to maximum junction temperature, by the thermal resistance factor. For dc or frequencies below 25 Hz the transistor must be operated within the constant $P_D = V_C \times I_C$ hyperbolic curve. This curve has a value of 106 Watts at case temperatures of 25°C and is 0 Watts at 110°C with a linear relation between the two temperatures such that

$$P_D \text{ allowable} = \frac{110^\circ - T_c}{0.8}$$

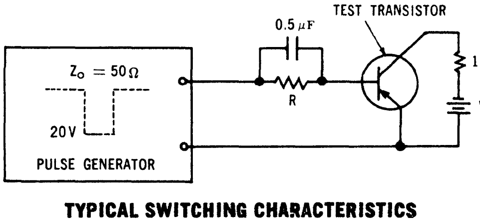
COLLECTOR CURRENT versus BASE CURRENT



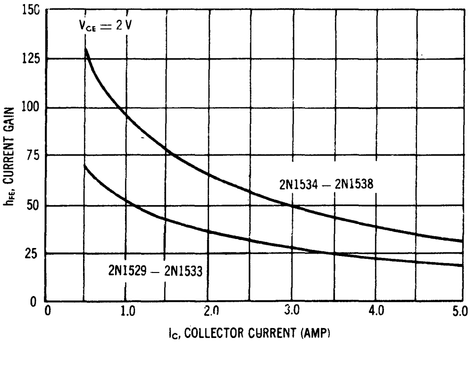
COLLECTOR CURRENT versus EMITTER BASE VOLTAGE



SWITCHING TIME MEASURING CIRCUIT



DC CURRENT GAIN versus COLLECTOR CURRENT

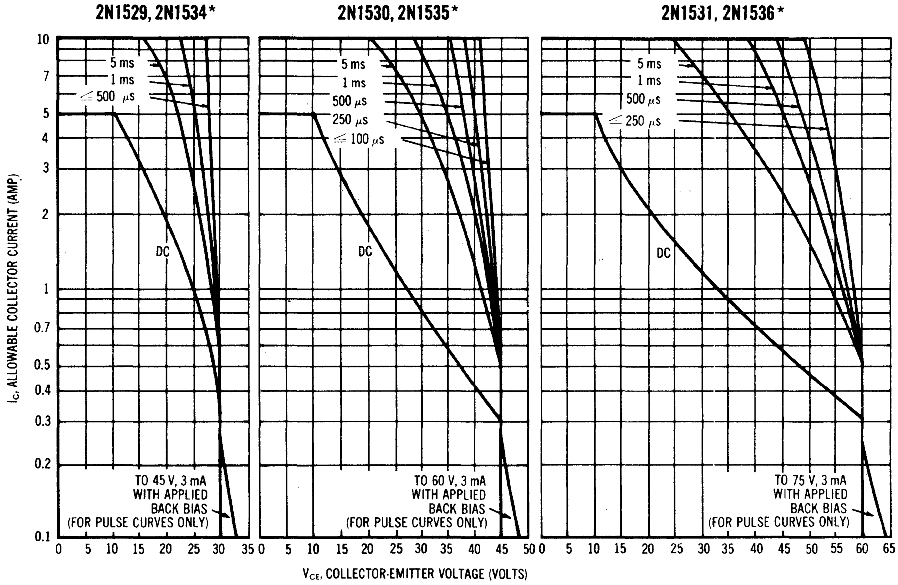


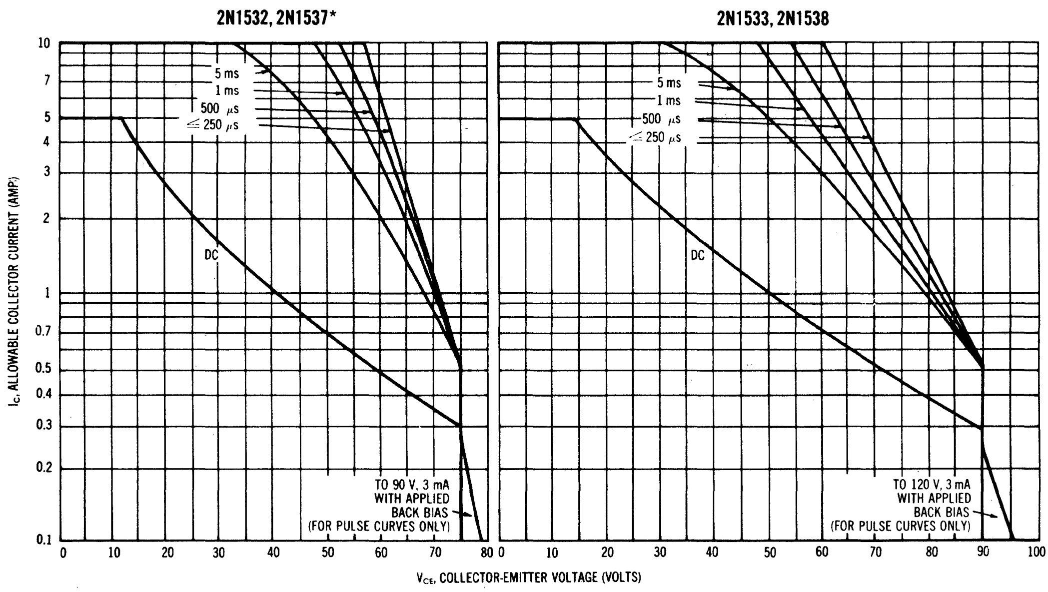
TYPICAL SWITCHING CHARACTERISTICS

	I_C (AMP)	V (VOLTS)	R (ohms)	t_d+t_r (μS)	t_s (μS)	t_f (μS)
2N1529-33	3	3	65	10	2	5
2N1534-38	3	3	100	8	3	5

SAFE OPERATING AREAS – PULSE CONDITIONS

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.





*Characteristics apply to corresponding "A" type numbers also.