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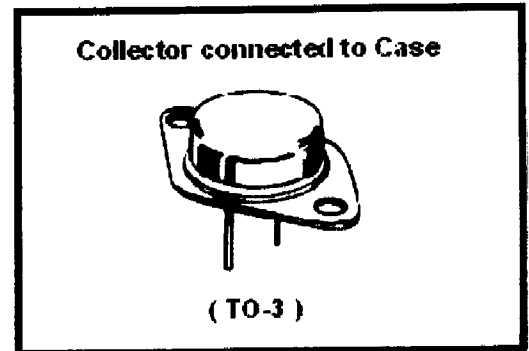
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2N4277 (GERMANIUM)

PNP germanium power transistor designed for high current applications requiring high-gain and low saturation voltages.

MAXIMUM RATINGS

Rating	Symbol	2N4277	Unit
Collector-Emitter Voltage	V_{CEO}	20	Vdc
Collector-Emitter Voltage	V_{CES}	30	Vdc
Collector-Base Voltage	V_{CB}	30	Vdc
Emitter-Base Voltage	V_{EB}	20	Vdc
Collector Current - Continuous *	I_C^*	← 60 →	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	← 170 → ← 2.0 →	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +11	$^\circ\text{C}$



THERMAL CHARACTERISTICS

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

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage† ($I_C = 1.0 \text{ Adc}, I_B = 0$)	BV_{CEO}^\dagger	20	-	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 300 \text{ mAdc}, V_{BE} = 0$)	BV_{CES}	30	-	Vdc
Collector Cutoff Current ($V_{CE} = 20 \text{ Vdc}, V_{BE}(\text{off}) = 2.0 \text{ Vdc}, T_C = +71^\circ\text{C}$)	I_{CEX}	-	15	mAde
Collector Cutoff Current ($V_{CB} = 2.0 \text{ Vdc}, I_E = 0$) ($V_{CB} = 30 \text{ Vdc}, I_E = 0$)	I_{CBO}	-	0.2 4.0	mAde
Emitter Cutoff Current ($V_{BE} = 20 \text{ Vdc}, I_C = 0$) ($V_{BE} = 20 \text{ Vdc}, I_C = 0, T_C = +71^\circ\text{C}$)	I_{EBO}	-	4.0 15	mAde

ON CHARACTERISTICS

DC Current Gain† ($I_C = 15 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$) ($I_C = 60 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$)	h_{FE}^\dagger	80 15	180 -	-
Collector-Emitter Saturation Voltage† ($I_C = 15 \text{ Adc}, I_B = 1.0 \text{ Adc}$) ($I_C = 60 \text{ Adc}, I_B = 6.0 \text{ Adc}$)	$V_{CE(\text{sat})}^\dagger$	-	0.15 0.3	Vdc
Base-Emitter Saturation Voltage† ($I_C = 15 \text{ Adc}, I_B = 1.0 \text{ Adc}$) ($I_C = 60 \text{ Adc}, I_B = 6.0 \text{ Adc}$)	$V_{BE(\text{sat})}^\dagger$	-	0.6 1.0	Vdc

SMALL SIGNAL CHARACTERISTICS

Common-Emitter Cutoff Frequency ($I_C = 15 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$)	f_{oe}	2.0	-	kHz
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† To avoid excessive heating of the collector junction, perform test with pulse method.