

Darlington Transistor

NPN Silicon

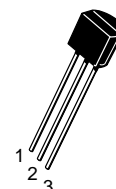
MPSA27

MAXIMUM RATINGS

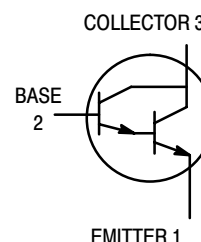
Rating	Symbol	MPSA27	Unit
Collector–Emitter Voltage	V_{CES}	60	Vdc
Emitter–Base Voltage	V_{EBO}	10	Vdc
Collector Current — Continuous	I_C	500	mA _{dc}
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^\circ\text{C/W}$



CASE 29–11, STYLE 1
TO–92 (TO–226AA)



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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = 100\ \mu\text{A}_{dc}$, $V_{BE} = 0$)	$V_{(BR)CES}$	60	—	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 100\ \mu\text{A}_{dc}$, $I_E = 0$)	$V_{(BR)CBO}$	60	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 30\ \text{V}$, $I_E = 0$) ($V_{CB} = 40\ \text{V}$, $I_E = 0$) ($V_{CB} = 50\ \text{V}$, $I_E = 0$)	I_{CBO}	—	—	100	nA _{dc}
Collector Cutoff Current ($V_{CE} = 30\ \text{V}$, $V_{BE} = 0$) ($V_{CE} = 40\ \text{V}$, $V_{BE} = 0$) ($V_{CE} = 50\ \text{V}$, $V_{BE} = 0$)	I_{CES}	—	—	500	nA _{dc}
Emitter Cutoff Current ($V_{EB} = 10\ \text{Vdc}$)	I_{EBO}	—	—	100	nA _{dc}

MPSA27

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

Characteristic	Symbol	Min	Typ	Max	Unit
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ON CHARACTERISTICS⁽¹⁾

DC Current Gain ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 100\text{ mA}$, $V_{CE} = 5.0\text{ V}$)	h_{FE}	10,000 10,000	— —	— —	—
Collector–Emitter Saturation Voltage ($I_C = 100\text{ mA}$, $I_B = 0.1\text{ mAdc}$)	$V_{CE(sat)}$	—	—	1.5	Vdc
Base–Emitter On Voltage ($I_C = 100\text{ mA}$, $V_{CE} = 5.0\text{ Vdc}$)	$V_{BE(on)}$	—	—	2.0	Vdc

SMALL–SIGNAL CHARACTERISTICS

Small Signal Current Gain ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$, $f = 100\text{ MHz}$)	h_{fe}	1.25	2.4	—	—
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1. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

MPSA27

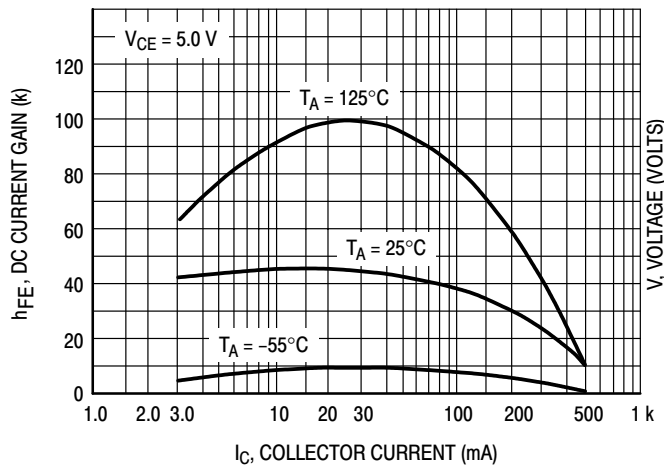


Figure 1. DC Current Gain

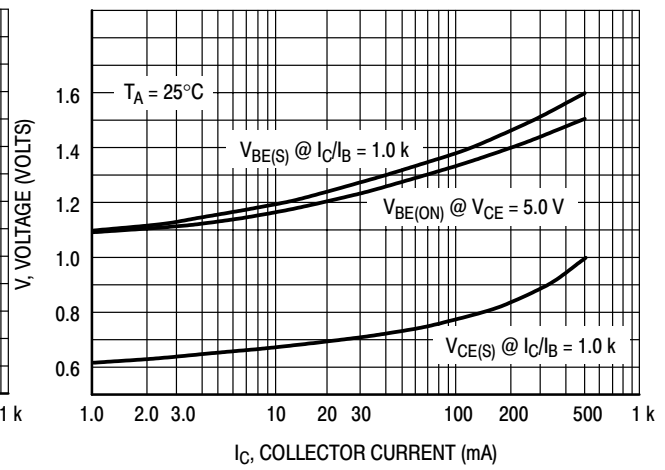


Figure 2. "ON" Voltages

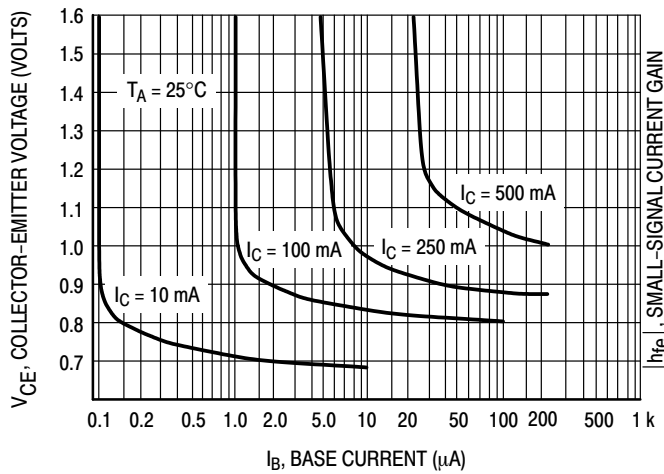


Figure 3. Collector Saturation Region

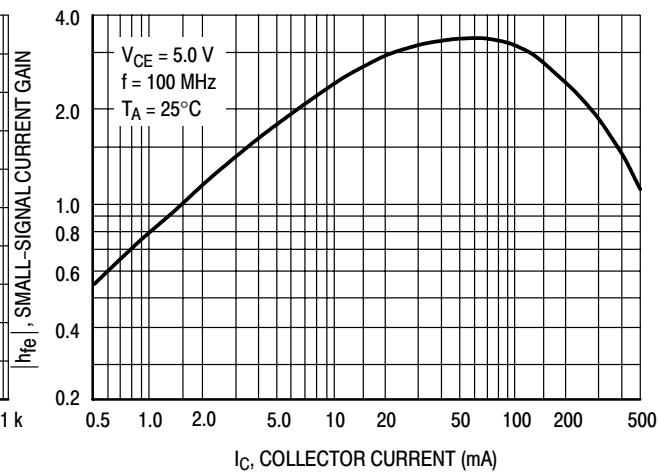


Figure 4. High Frequency Current Gain

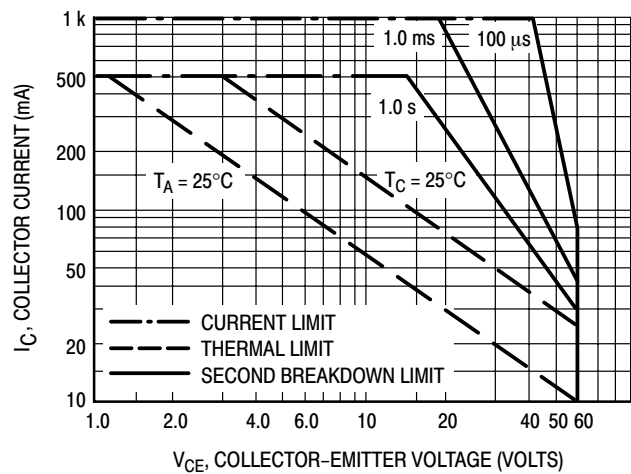


Figure 5. Active Region — Safe Operating Area

