

MOTOROLA

SEMICONDUCTOR TECHNICAL DATA

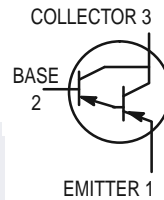
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Darlington Transistors

PNP Silicon

MPSA75

MPSA77



CASE 29-04, STYLE 1
TO-92 (TO-226AA)

MAXIMUM RATINGS

Rating	Symbol	MPSA75	MPSA77	Unit
Collector–Emitter Voltage	V_{CES}	-40	-60	Vdc
Emitter–Base Voltage	V_{EBO}	-10		Vdc
Collector Current — Continuous	I_C	-500		Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625	5.0	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

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

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 ($I_C = -100 \mu\text{Adc}$, $V_{BE} = 0$)	MPSA75 MPSA77	$V_{(BR)CES}$	-40 -60	— —	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	MPSA75 MPSA77	$V_{(BR)CBO}$	-40 -60	— —	— —	Vdc
Collector Cutoff Current ($V_{CB} = -30 \text{ V}$, $I_E = 0$) ($V_{CB} = -50 \text{ V}$, $I_E = 0$)	MPSA75 MPSA77	I_{CBO}	— —	— —	-100 -100	nAdc
Collector Cutoff Current ($V_{CE} = -30 \text{ V}$, $V_{BE} = 0$) ($V_{CE} = -50 \text{ V}$, $V_{BE} = 0$)	MPSA75 MPSA77	I_{CES}	— —	— —	-500 -500	nAdc
Emitter Cutoff Current ($V_{EB} = -10 \text{ Vdc}$)		I_{EBO}	—	—	-100	nAdc

ON CHARACTERISTICS

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}	—	—	-2.0	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current–Gain — High Frequency ($I_C = -10 \text{ mA}$, $V_{CE} = -5.0 \text{ V}$, $f = 100 \text{ MHz}$)	$ h_{fe} $	1.25	2.4	—	—
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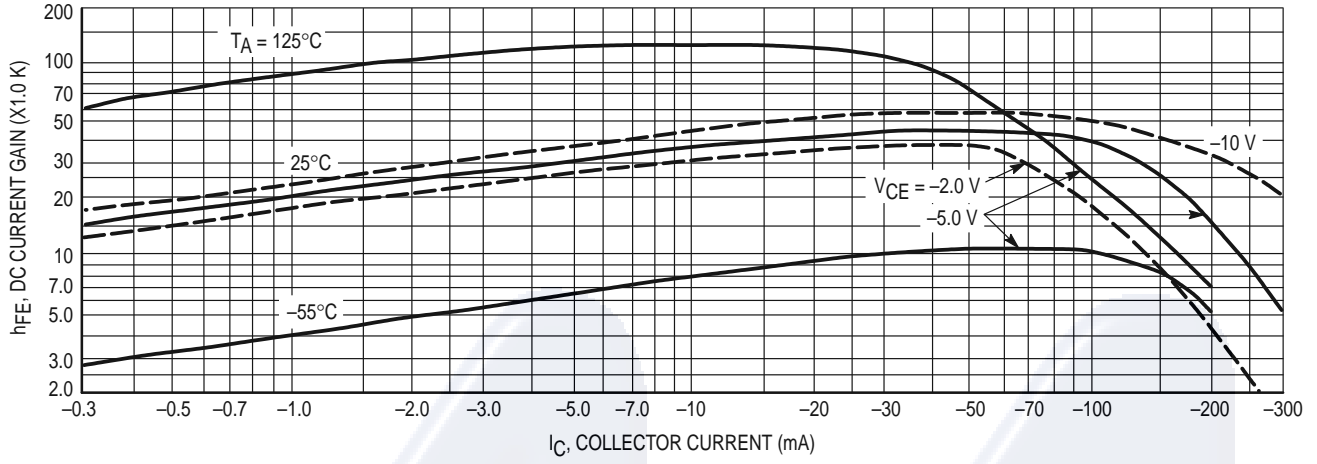


Figure 1. DC Current Gain

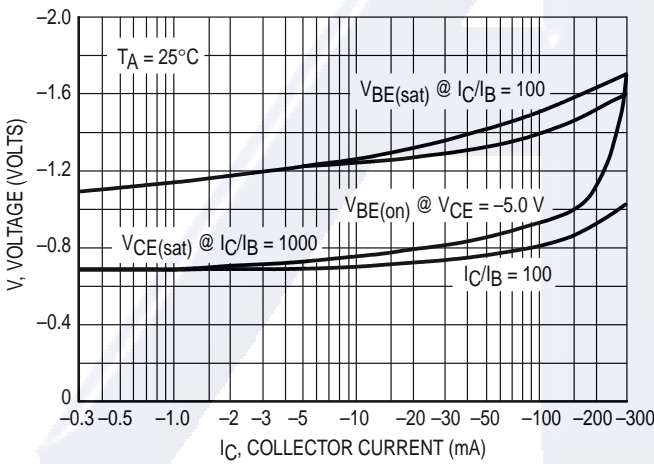


Figure 2. "On" Voltage

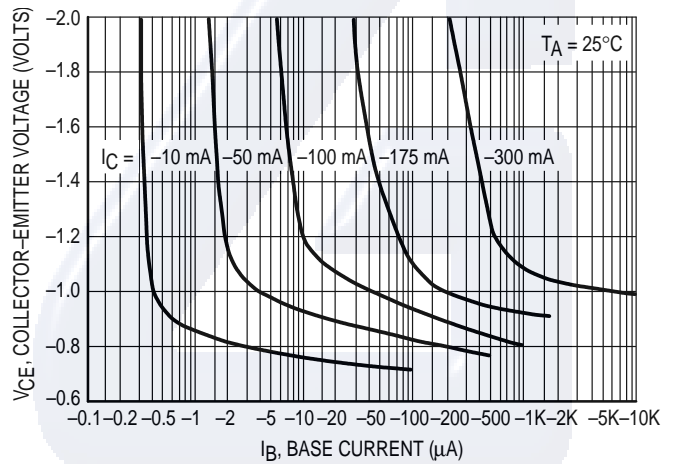


Figure 3. Collector Saturation Region

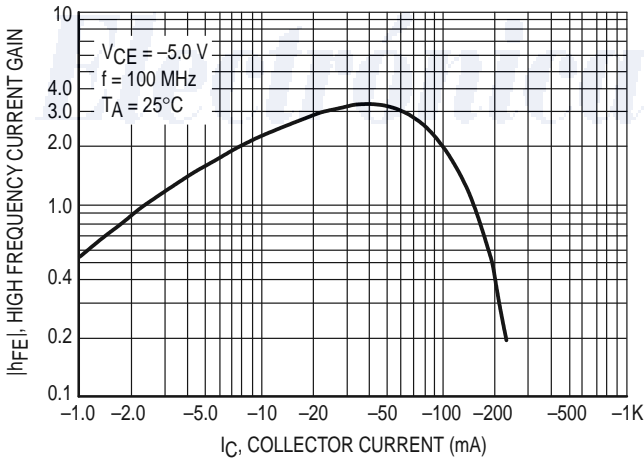


Figure 4. High Frequency Current Gain

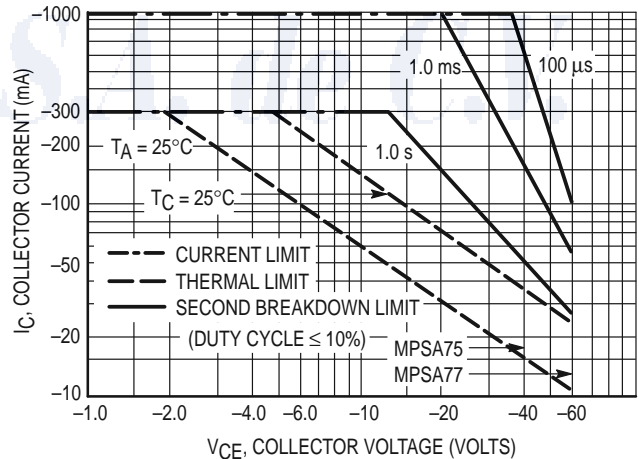
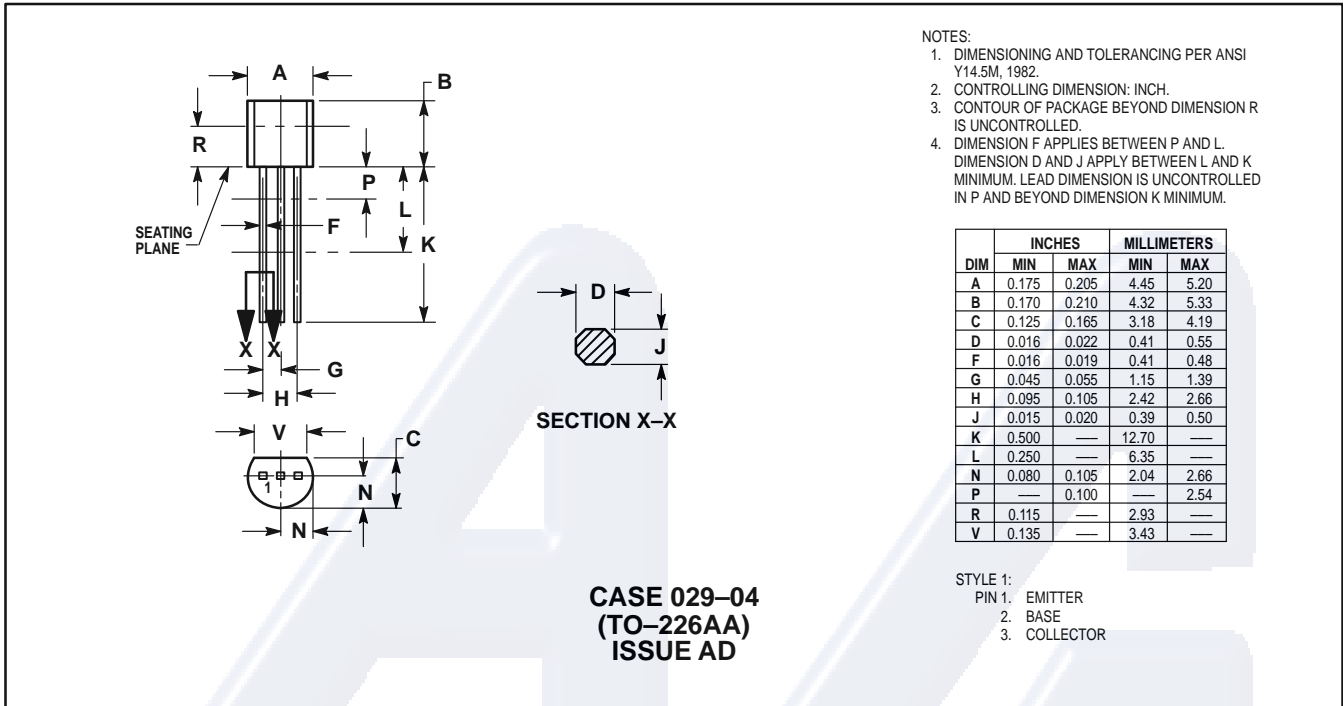


Figure 5. Active Region, Safe Operating Area

PACKAGE DIMENSIONS




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