

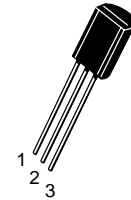
One Watt Darlington Transistors

NPN Silicon

MPS6724
MPS6725

MAXIMUM RATINGS

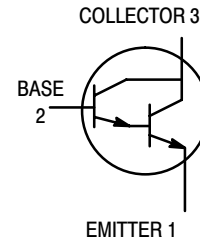
Rating	Symbol	MPS6724	MPS6725	Unit
Collector–Emitter Voltage	V_{CES}	40	50	Vdc
Collector–Base Voltage	V_{CBO}	50	60	Vdc
Emitter–Base Voltage	V_{EBO}	12		Vdc
Collector Current — Continuous	I_C	1000		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0	8.0	Watts mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.5	20	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150		$^\circ\text{C}$



CASE 29–05, STYLE 1
TO–92 (TO–226AE)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	$^\circ\text{C}/\text{W}$



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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 1.0 \text{ mAdc}, I_E = 0$)	MPS6724 MPS6725	$V_{(BR)CES}$	40 50	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = 1.0 \mu\text{Adc}, I_E = 0$)	MPS6724 MPS6725	$V_{(BR)CBO}$	50 60	— —	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)		$V_{(BR)EBO}$	12	—	Vdc
Collector Cutoff Current ($V_{CB} = 30 \text{ Vdc}, I_E = 0$) ($V_{CB} = 40 \text{ Vdc}, I_E = 0$)	MPS6724 MPS6725	I_{CBO}	— —	100 100	nAdc
Emitter Cutoff Current ($V_{EB} = 10 \text{ Vdc}, I_C = 0$)		I_{EBO}	—	100	nAdc

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$; Duty Cycle $\leq 2.0\%$.

MPS6724 MPS6725

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

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS⁽¹⁾				
DC Current Gain ($I_C = 200\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 1000\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$)	h_{FE}	25,000 4,000	— 40,000	—
Collector–Emitter Saturation Voltage ($I_C = 1000\text{ mAdc}$, $I_B = 2.0\text{ mAdc}$)	$V_{CE(sat)}$	—	1.5	Vdc
Base–Emitter On Voltage ($I_C = 1000\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$)	$V_{BE(on)}$	—	2.0	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain – Bandwidth Product ($I_C = 200\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	100	1000	MHz
Collector–Base Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{cb}	—	10	pF

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$; Duty Cycle $\leq 2.0\%$.

TYPICAL CHARACTERISTICS

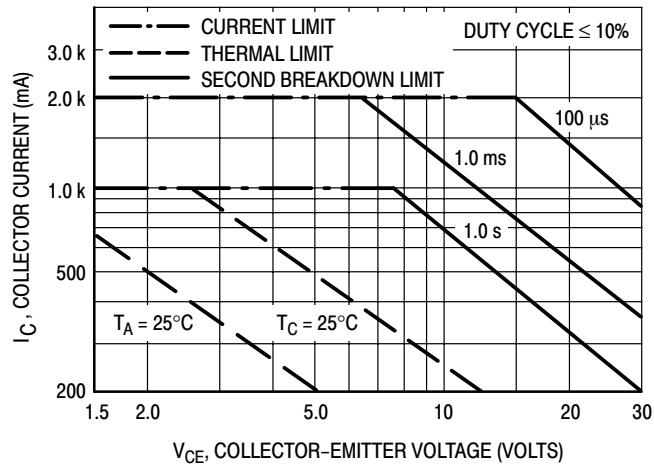


Figure 1. Active Region — Safe Operating Area

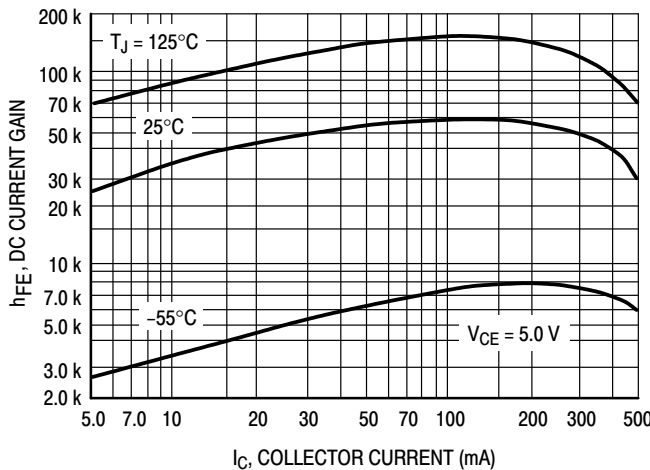


Figure 2. DC Current Gain

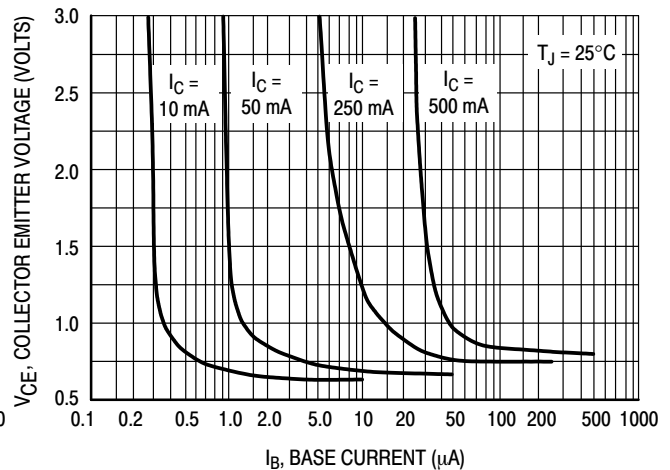


Figure 3. Collector Saturation Region

MPS6724 MPS6725

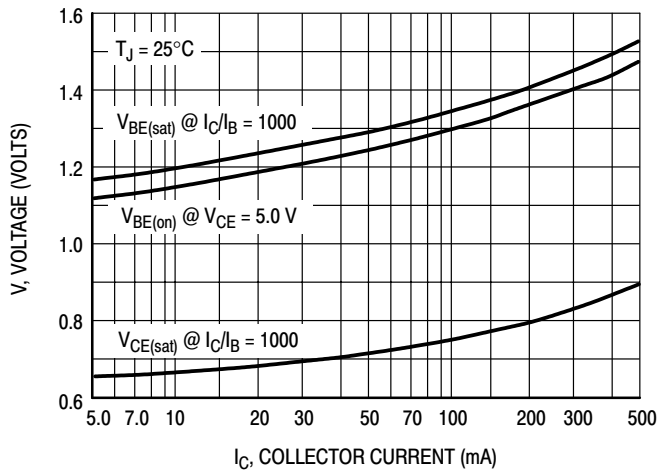


Figure 4. "ON" Voltages

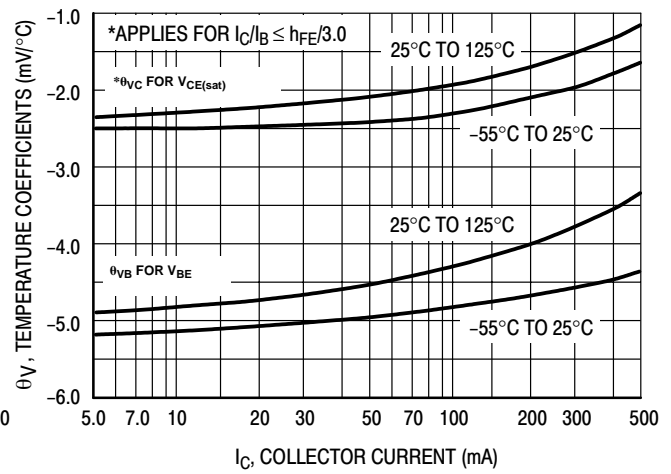


Figure 5. Temperature Coefficients

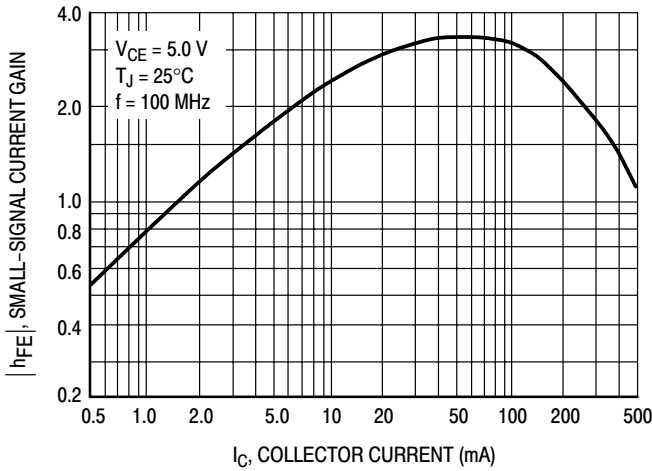


Figure 6. High Frequency Current Gain

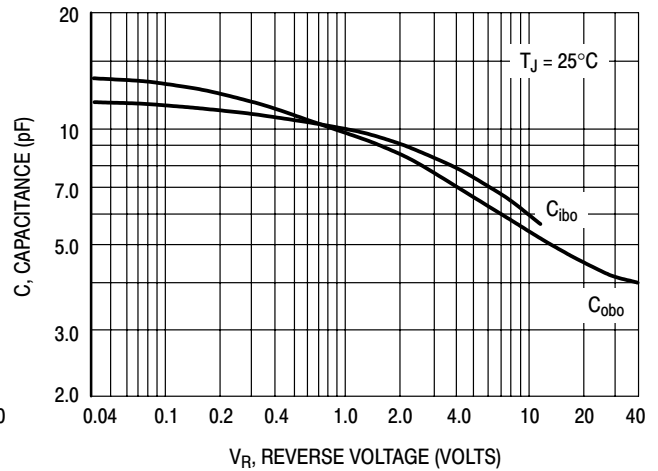
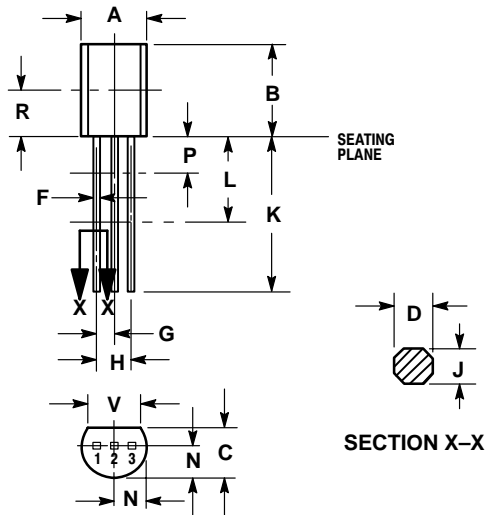


Figure 7. Capacitance

MPS6724 MPS6725

PACKAGE DIMENSIONS

CASE 029-05
(TO-226AE)
ISSUE AD




NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSIONS D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.022	0.46	0.56
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.018	0.024	0.46	0.61
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.135	---	3.43	---
V	0.135	---	3.43	---

STYLE 1:

- PIN 1. EMITTER
- BASE
- COLLECTOR

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