MPS6724, MPS6725

One Watt Darlington Transistors

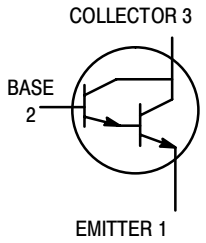
NPN Silicon

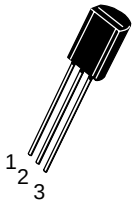
ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Packages are Available*





TO−92 (TO−226)
CASE 29−10
STYLE 1

MAXIMUM RATINGS

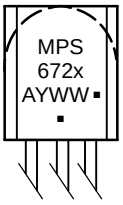
Rating	Symbol	Value	Unit
Collector−Emitter Voltage MPS6724 MPS6725	V_{CEO}	 40 50	Vdc
Collector−Base Voltage MPS6724 MPS6725	V_{CBO}	 50 60	Vdc
Emitter−Base Voltage	V_{EBO}	12	Vdc
Collector Current − Continuous	I_C	1000	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	1.0 8.0	W mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	2.5 20	W 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	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	50	°C/W

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

MARKING DIAGRAM



MPS672x = Device Code
x = 4 or 5
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 1) (I_C = 1.0 mAdc, I_B = 0)	MPS6724 MPS6725	$V_{(BR)CES}$	 40 50	 − −	Vdc
Collector−Base Breakdown Voltage (I_C = 1.0 μAdc, I_E = 0)	MPS6724 MPS6725	$V_{(BR)CBO}$	 50 60	 − −	Vdc
Emitter−Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	12	−	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0) (V_{CB} = 40 Vdc, I_E = 0)	 MPS6724 MPS6725	I_{CBO}	 − −	 100 100	nAdc
Emitter Cutoff Current (V_{EB} = 10 Vdc, I_C = 0)		I_{EBO}	−	100	nAdc
ON CHARACTERISTICS (Note 1)					
DC Current Gain (I_C = 200 mAdc, V_{CE} = 5.0 Vdc) (I_C = 1000 mAdc, V_{CE} = 5.0 Vdc)		h_{FE}	 25,000 4,000	 − 40,000	−
Collector−Emitter Saturation Voltage (I_C = 1000 mAdc, I_B = 2.0 mAdc)		$V_{CE(sat)}$	−	1.5	Vdc
Base−Emitter On Voltage (I_C = 1000 mAdc, V_{CE} = 5.0 Vdc)		$V_{BE(on)}$	−	2.0	Vdc
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain − Bandwidth Product (I_C = 200 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	100	1000	MHz
Collector−Base Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{cb}	−	10	pF

1. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

TYPICAL CHARACTERISTICS

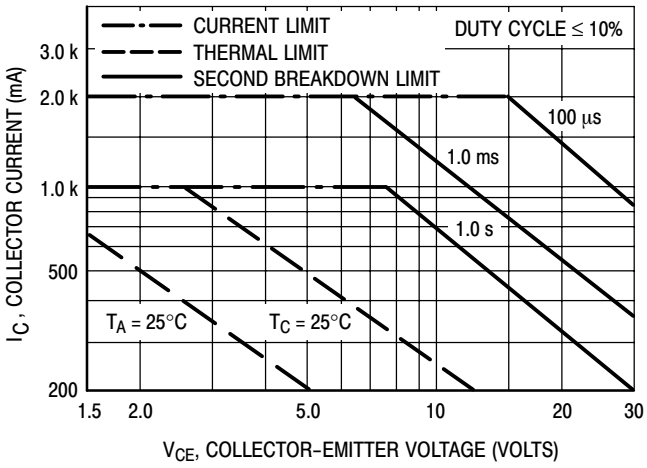


Figure 1. Active Region — Safe Operating Area

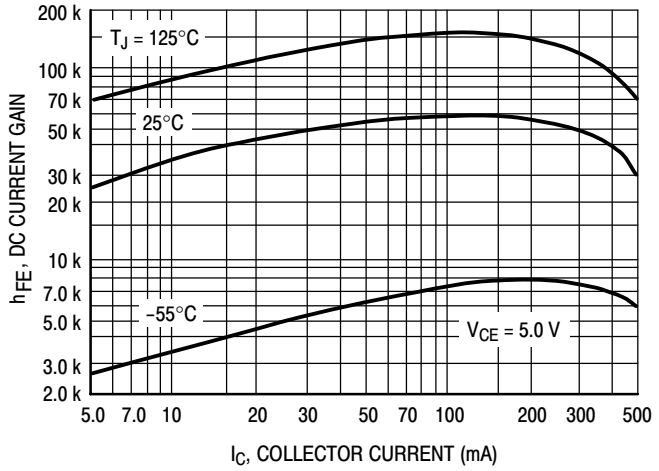


Figure 2. DC Current Gain

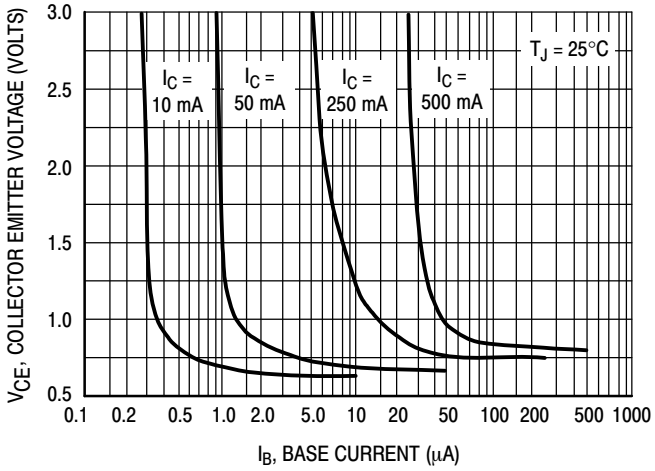


Figure 3. Collector Saturation Region

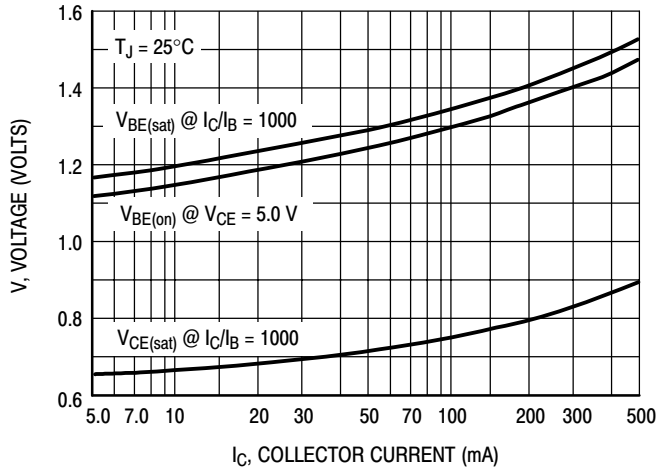


Figure 4. “ON” Voltages

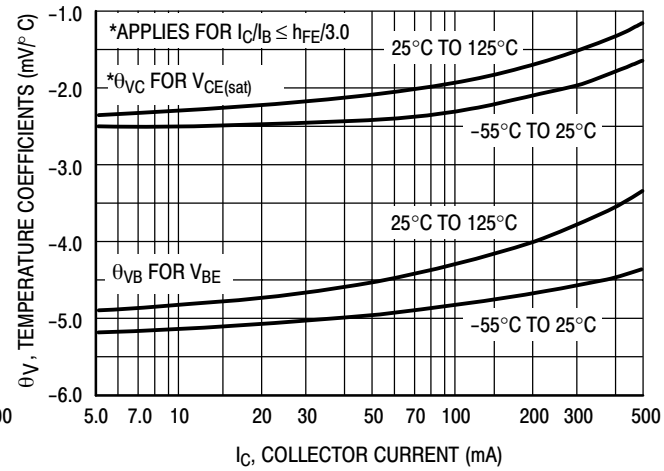


Figure 5. Temperature Coefficients

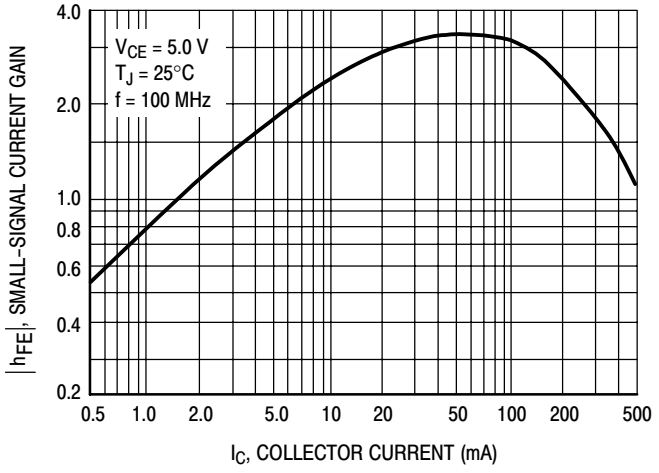


Figure 6. High Frequency Current Gain

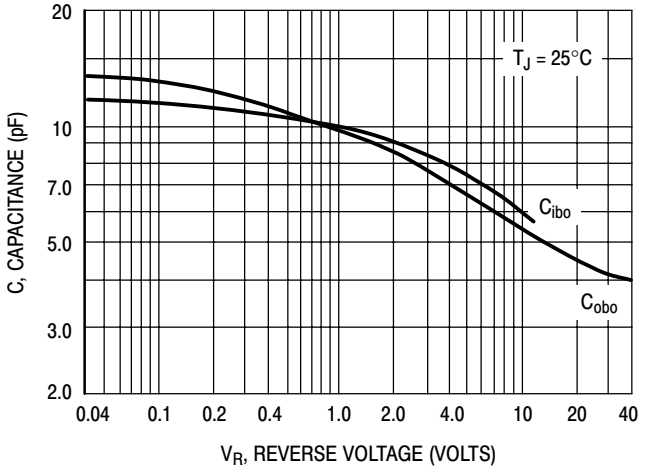


Figure 7. Capacitance

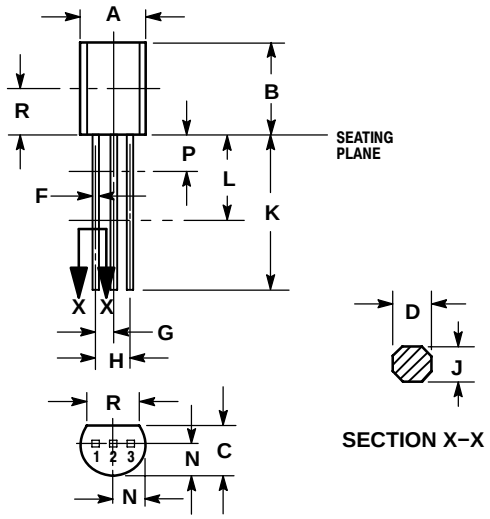
ORDERING INFORMATION

Device	Package	Shipping†
MPS6724	TO−92	5000 Units / Bulk
MPS6724G	TO−92 (Pb−Free)	
MPS6725	TO−92	5000 Units / Bulk
MPS6725G	TO−92 (Pb−Free)	
MPS6724RLRA	TO−92	2000 Units / Tape & Reel
MPS6724RLRAG	TO−92 (Pb−Free)	
MPS6725RLRP	TO−92	2000 Units / Tape & Ammo Box
MPS6725RLRPG	TO−92 (Pb−Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

PACKAGE DIMENSIONS

TO−92 (TO−226)
CASE 29−10
ISSUE AL



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 MIMIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	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	0.021	0.457	0.533
F	0.016	0.019	0.407	0.482
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	---

STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.

MPS6724/D