



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



MPS650, MPS651, NPN MPS750, MPS751, PNP

MPS651 and MPS751 are Preferred Devices

Amplifier Transistors

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	MPS650 MPS750	MPS651 MPS751	Unit
Collector - Emitter Voltage	V_{CE}	40	60	Vdc
Collector - Base Voltage	V_{CB}	60	80	Vdc
Emitter - Base Voltage	V_{EB}	5.0		Vdc
Collector Current - Continuous	I_C	2.0		Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0		mW mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12		W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$

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.

THERMAL CHARACTERISTICS

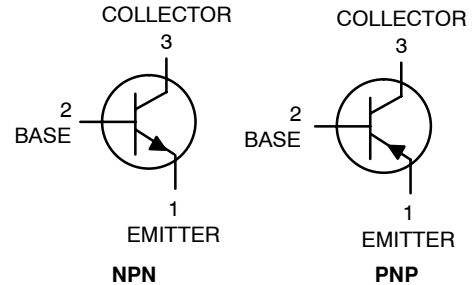
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

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



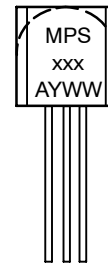
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29-11

MARKING DIAGRAM



xxx = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

MPS650, MPS651, NPN MPS750, MPS751, PNP

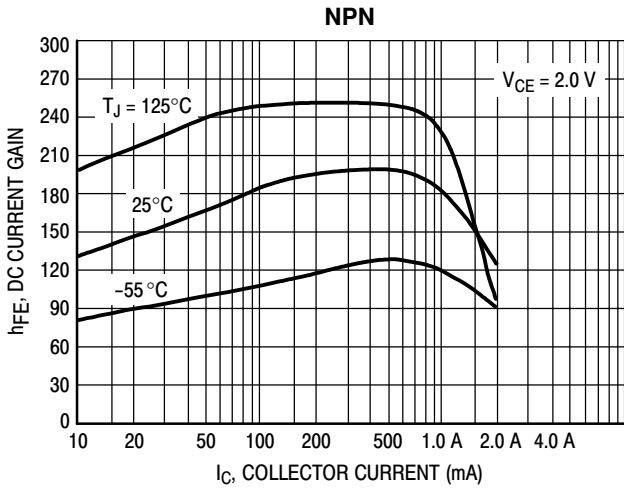
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector – Emitter Breakdown Voltage (Note 1) (I _C = 10 mA, I _B = 0)	V _{(BR)CEO}	40	–	Vdc
MPS650, MPS750 MPS651, MPS751		60	–	
Collector – Base Breakdown Voltage (I _C = 100 μA, I _E = 0)	V _{(BR)CBO}	60	–	Vdc
MPS650, MPS750 MPS651, MPS751		80	–	
Emitter – Base Breakdown Voltage (I _C = 0, I _E = 10 μA)	V _{(BR)EBO}	5.0	–	Vdc
Collector Cutoff Current (V _{CB} = 60 Vdc, I _E = 0) (V _{CB} = 80 Vdc, I _E = 0)	I _{CBO}	–	0.1	μA
MPS650, MPS750 MPS651, MPS751		–	0.1	
Emitter Cutoff Current (V _{EB} = 4.0 V, I _C = 0)	I _{EBO}	–	0.1	μA
ON CHARACTERISTICS (Note 1)				
DC Current Gain (I _C = 50 mA, V _{CE} = 2.0 V) (I _C = 500 mA, V _{CE} = 2.0 V) (I _C = 1.0 A, V _{CE} = 2.0 V) (I _C = 2.0 A, V _{CE} = 2.0 V)	h _{FE}	75	–	–
		75	–	
		75	–	
		40	–	
Collector – Emitter Saturation Voltage (I _C = 2.0 A, I _B = 200 mA) (I _C = 1.0 A, I _B = 100 mA)	V _{CE(sat)}	–	0.5	Vdc
		–	0.3	
Base – Emitter On Voltage (I _C = 1.0 A, V _{CE} = 2.0 V)	V _{BE(on)}	–	1.0	Vdc
Base – Emitter Saturation Voltage (I _C = 1.0 A, I _B = 100 mA)	V _{BE(sat)}	–	1.2	Vdc
SMALL – SIGNAL CHARACTERISTICS				
Current – Gain – Bandwidth Product (Note 2) (I _C = 50 mA, V _{CE} = 5.0 Vdc, f = 100 MHz)	f _T	75	–	MHz

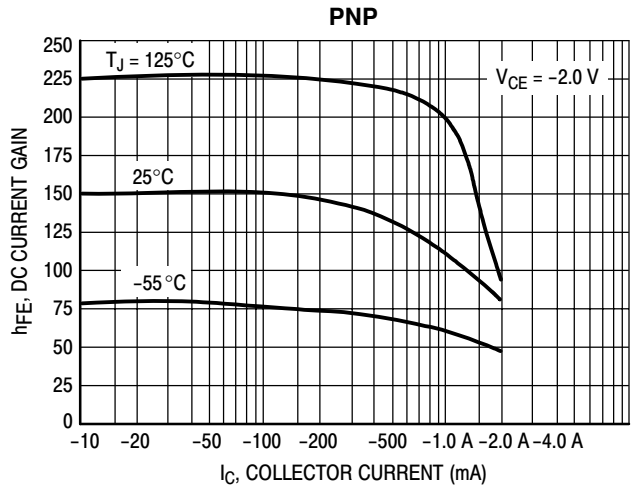
1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle = 2.0%.

2. f_T is defined as the frequency at which |h_{fe}| extrapolates to unity.

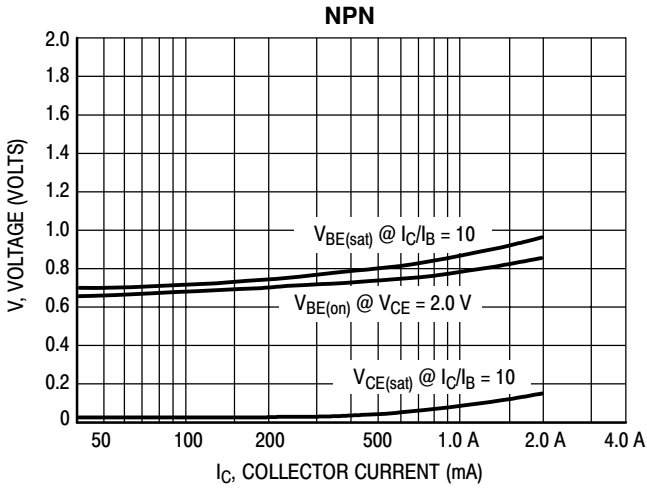
MPS650, MPS651, NPN MPS750, MPS751, PNP



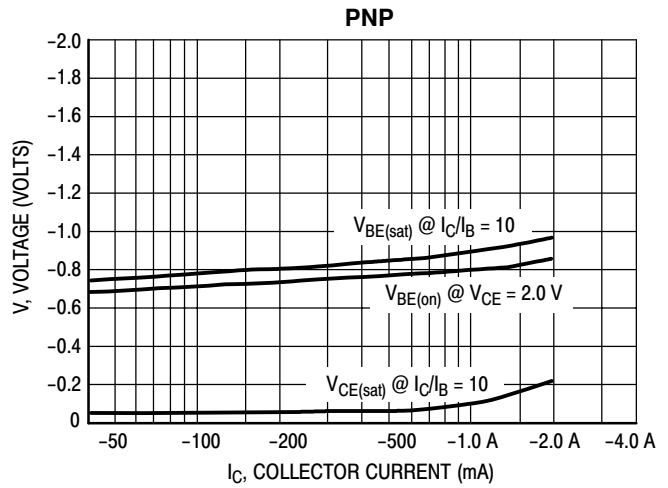
**Figure 1. MPS650, MPS651
Typical DC Current Gain**



**Figure 2. MPS750, MPS751
Typical DC Current Gain**



**Figure 3. MPS650, MPS651
On Voltages**



**Figure 4. MPS750, MPS751
On Voltages**

MPS650, MPS651, NPN MPS750, MPS751, PNP

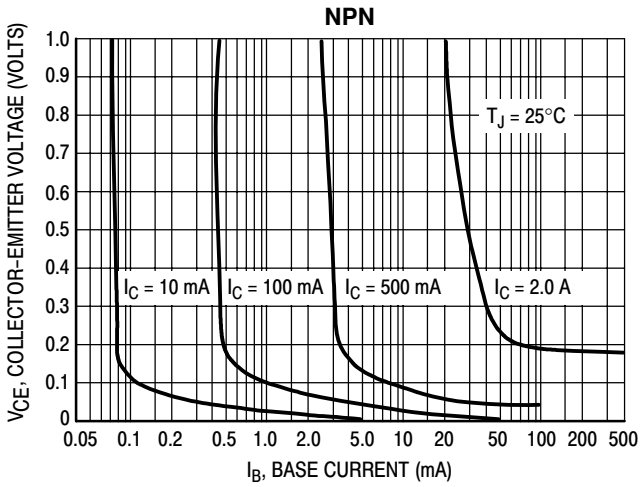


Figure 5. MPS650, MPS651
Collector Saturation Region

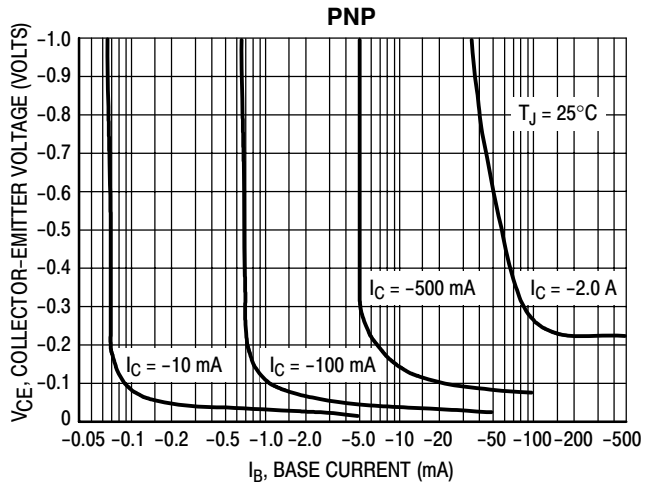


Figure 6. MPS750, MPS751
Collector Saturation Region

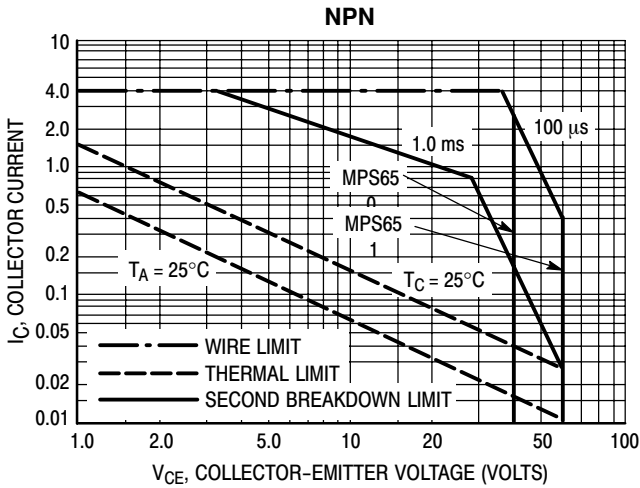


Figure 7. MPS650, MPS651 SOA,
Safe Operating Area

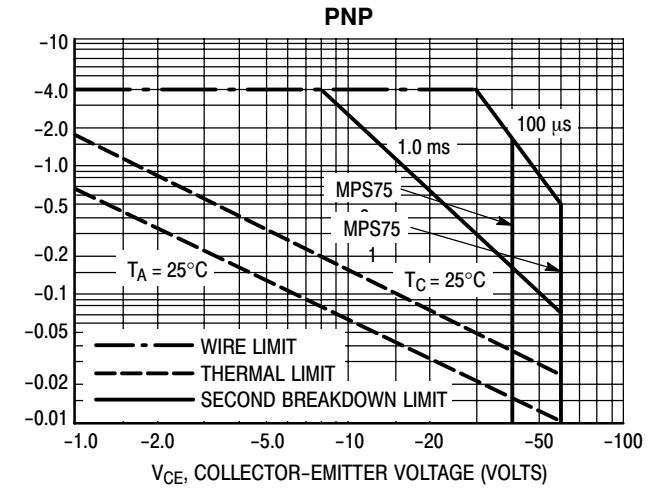


Figure 8. MPS750, MPS751 SOA,
Safe Operating Area

MPS650, MPS651, NPN MPS750, MPS751, PNP

ORDERING INFORMATION

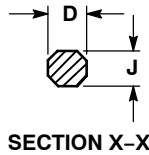
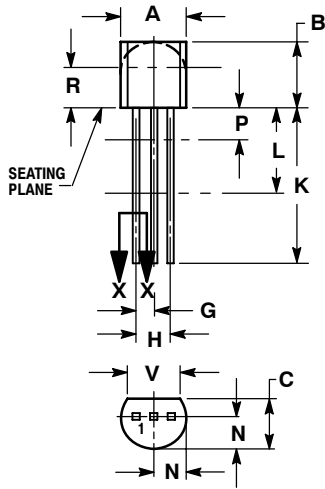
Device	Package	Shipping [†]
MPS650	TO-92	5000 Units / Bulk
MPS650G	TO-92 (Pb-Free)	5000 Units / Bulk
MPS650RLRA	TO-92	2000 / Tape & Reel
MPS650RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPS650ZL1	TO-92	2000 / Tape & Ammunition
MPS650ZL1G	TO-92 (Pb-Free)	2000 / Tape & Ammunition
MPS651	TO-92	5000 Units / Bulk
MPS651G	TO-92 (Pb-Free)	5000 Units / Bulk
MPS651RLRA	TO-92	2000 / Tape & Reel
MPS651RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPS651RLRBG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPS651RLRM	TO-92	2000 / Tape & Ammunition
MPS651RLRMG	TO-92 (Pb-Free)	2000 / Tape & Ammunition
MPS750	TO-92	5000 Units / Bulk
MPS750G	TO-92 (Pb-Free)	5000 Units / Bulk
MPS750RLRA	TO-92	2000 / Tape & Reel
MPS750RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPS750RLRP	TO-92	2000 / Tape & Ammunition
MPS750RLRPG	TO-92 (Pb-Free)	2000 / Tape & Ammunition
MPS751	TO-92	5000 Units / Bulk
MPS751G	TO-92 (Pb-Free)	5000 Units / Bulk
MPS751RLRA	TO-92	2000 / Tape & Reel
MPS751RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPS751RLRP	TO-92	2000 / Tape & Ammunition
MPS751RLRPG	TO-92 (Pb-Free)	2000 / Tape & Ammunition
MPS751ZL1	TO-92	2000 / Tape & Ammunition
MPS751ZL1G	TO-92 (Pb-Free)	2000 / Tape & Ammunition

[†]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.

MPS650, MPS651, NPN MPS750, MPS751, PNP

PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
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. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
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	0.115	---	2.93	---
V	0.135	---	3.43	---

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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.