Power Transistor 60 V, 10 A General Purpose PNP

NST60100

Designed for general purpose power and switching applications such as regulators, converters and power amplifiers. Housed in advanced LFPAK package (5 x 6 mm) with excellent thermal conduction. Automotive end applications include air bag deployment, power train control units, and instrument clusters.

Features

- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Value	Unit
Collector−Emitter Voltage	V_{CEO}	−60	Vdc
Emitter−Base Voltage	V_{EBO}	−5	Vdc
Collector Current − Continuous	I_C	−10	A
Collector Current − Peak; $t_p \le 1$ ms	I_{CM}	−20	A
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C

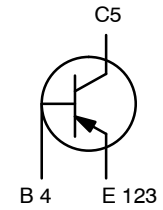
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case per Device (Note 1)	$R_{\theta JC}$	6	°C/W
Thermal Resistance, Junction−to−Ambient per Device (Note 1)	$R_{\theta JA}$	70	°C/W
Total Power Dissipation per Device @ T_A = 25°C, Junction−to−Mount	P_D	25	W

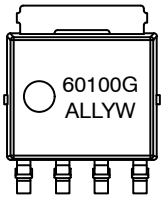
1. Surface−mounted on FR4 board using a 1in^2, 2 oz. Cu pad

PNP TRANSISTOR
60 V, 10 A



LFPAK4 5x6
CASE 760AB

MARKING DIAGRAM



60100G	= Specific Device Code
A	= Assembly Location
LL	= Wafer Lot
Y	= Year
W	= Work Week

ORDERING INFORMATION

Device	Package	Shipping†
NST60100TWG	LFPAK4 5x6 (Pb−Free)	3000 / Tape & Reel
NSVT60100TWG	LFPAK4 5x6 (Pb−Free)	3000 / Tape & Reel

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector Cutoff Current (V_{CE} = Rated V_{CEO}, V_{BE} = 0)	I_{CES}	–	–	–100	nA
Emitter Cutoff Current (V_{EB} = –5 V)	I_{EBO}	–	–	–100	nA
ON CHARACTERISTICS					
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$				V
(I_C = –1 A, I_B = –0.05 A)		–	–	–0.16	
(I_C = –5 A, I_B = –0.5 A)		–	–	–0.45	
(I_C = –10 A, I_B = –1.0 A)		–	–	–1.20	
Base–Emitter Saturation Voltage	$V_{BE(sat)}$				V
(I_C = –1 A, I_B = –0.05 A)		–	–	–0.90	
(I_C = –10 A, I_B = –1.0 A)		–	–	–1.50	
DC Current Gain	h_{FE}				–
(V_{CE} = –2 V, I_C = –1 A)		120	–	–	
(V_{CE} = –2 V, I_C = –5 A)		60	–	–	
(V_{CE} = –2 V, I_C = –10 A)		30	–	–	
DYNAMIC CHARACTERISTICS					
Collector Capacitance (V_{CB} = –10 V, f_{test} = 1 MHz)	C_{cb}	–	130	–	pF
Gain Bandwidth Product (I_C = –0.5 A, V_{CE} = –10 V, f = 20 MHz)	f_T	–	90	–	MHz

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL CHARACTERISTICS

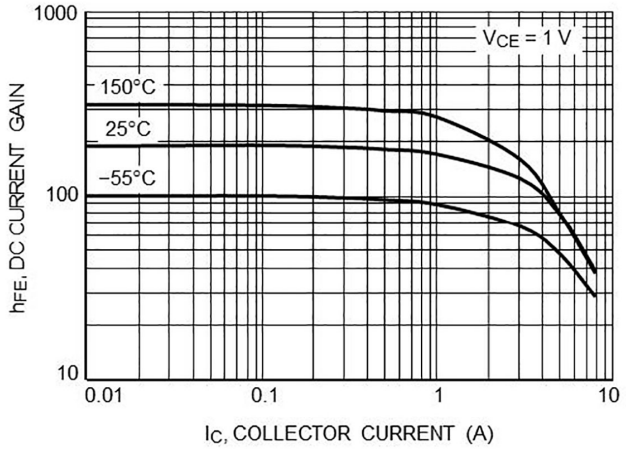


Figure 1. DC Current Gain

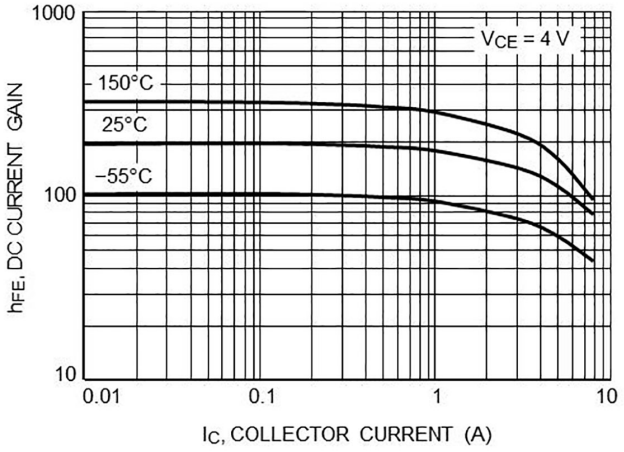


Figure 2. DC Current Gain

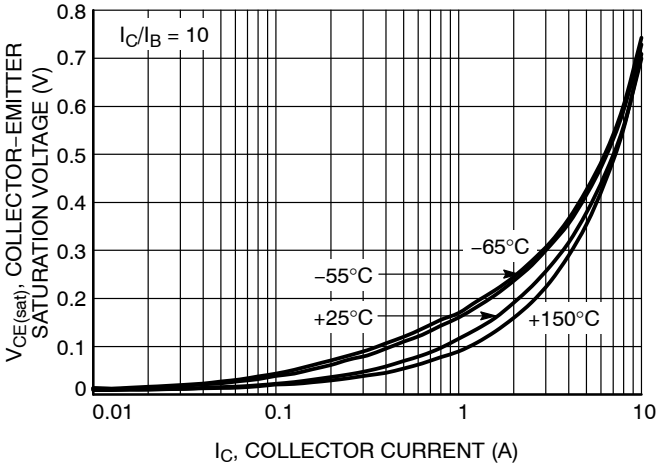


Figure 3. Saturation Voltage $V_{CE(sat)}$

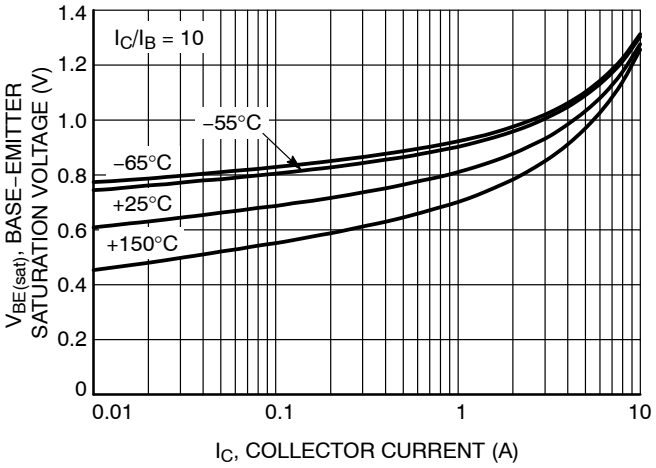


Figure 4. Saturation Voltage $V_{BE(sat)}$

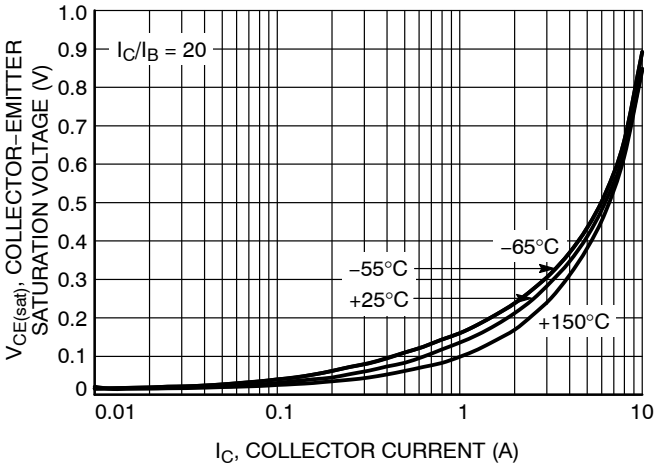


Figure 5. Saturation Voltage $V_{CE(sat)}$

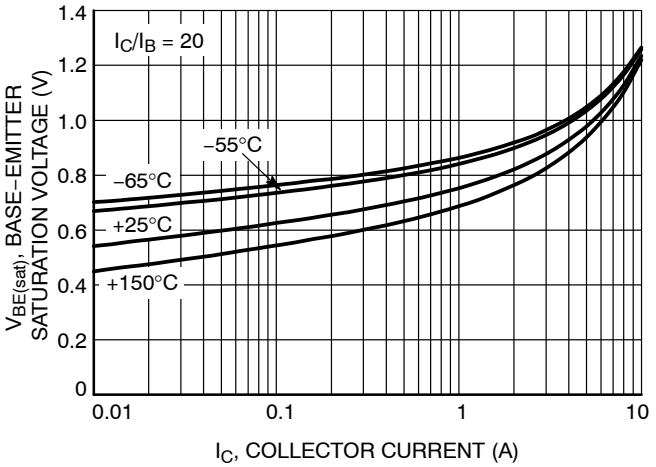


Figure 6. Saturation Voltage $V_{BE(sat)}$

TYPICAL CHARACTERISTICS (continued)

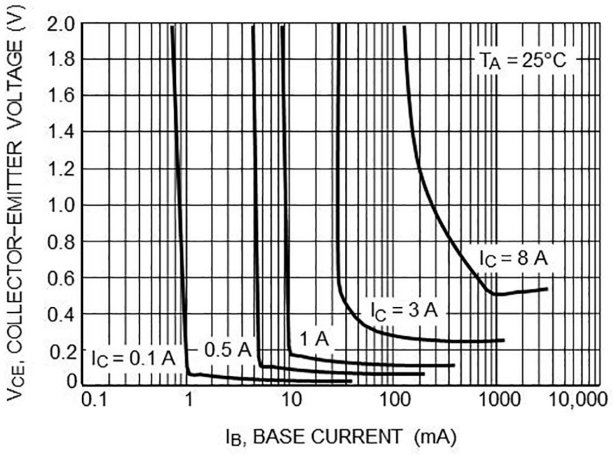


Figure 7. Collector Saturation Region

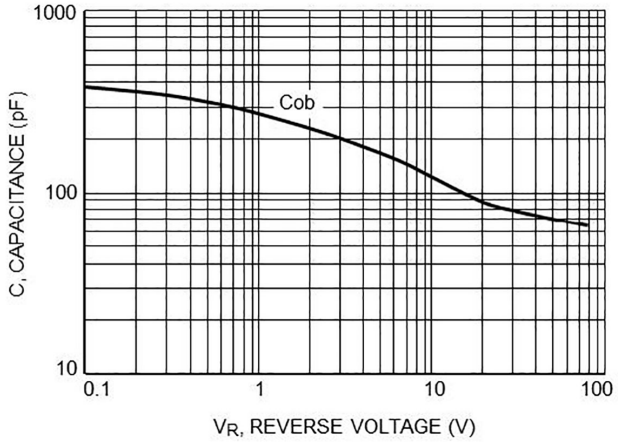


Figure 8. Capacitance

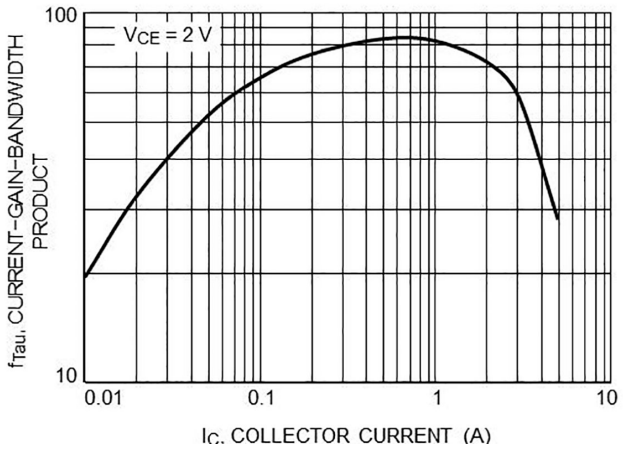


Figure 9. Current−Gain−Bandwidth Product

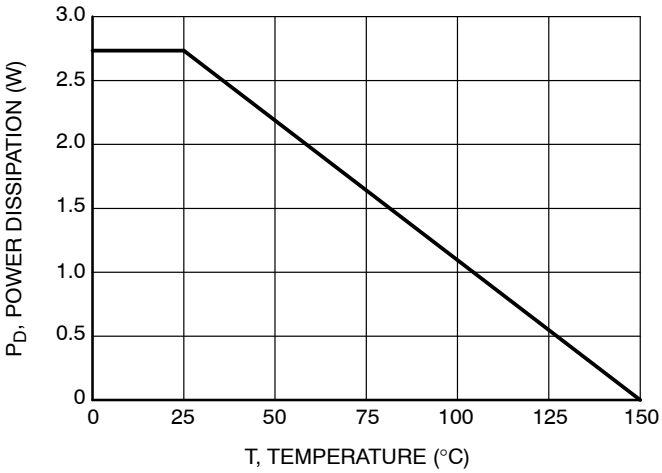


Figure 10. Power Derating

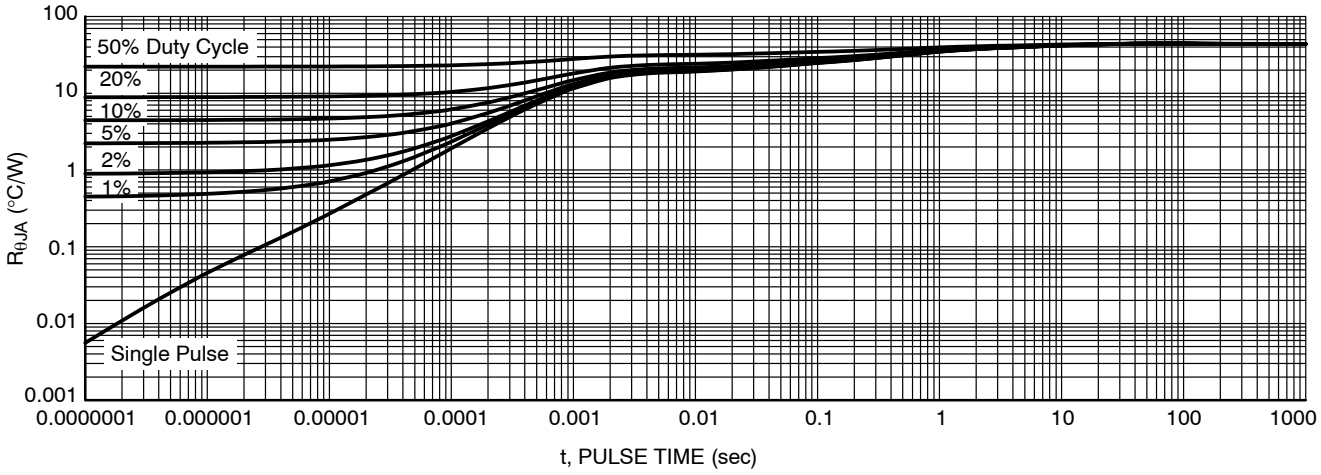
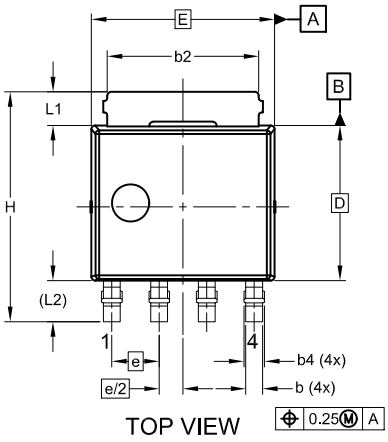


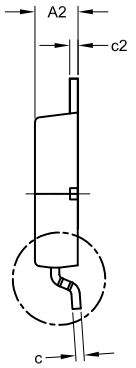
Figure 11. Typical Transient Thermal Response, Junction−to−Ambient

PACKAGE DIMENSIONS

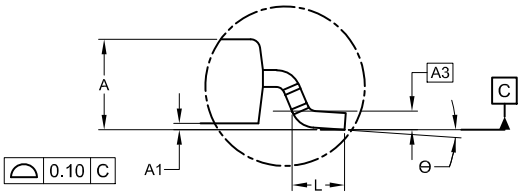
LFPAK4 4.90x4.15x1.15MM, 1.27P
CASE 760AB
ISSUE D



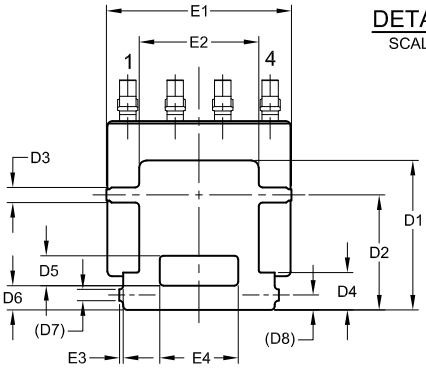
TOP VIEW



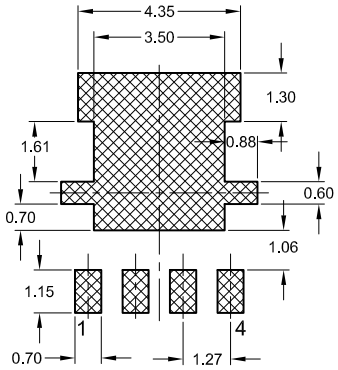
SIDE VIEW



DETAIL 'A'
SCALE: 2:1



BOTTOM VIEW



RECOMMENDED LAND PATTERN

*FOR ADDITIONAL INFORMATION ON OUR PB−FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.150mm PER SIDE.
4. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.

MILLIMETER			
DIM	MIN	NOM	MAX
A	1.10	1.20	1.30
A1	0.00	0.08	0.15
A2	1.10	1.15	1.20
A3		0.25 BSC	
b	0.40	0.45	0.50
b2	3.80	4.10	4.40
b4	0.45	0.55	0.65
c	0.19	0.22	0.25
c2	0.19	0.22	0.25
D		4.15 BSC	
D1	3.80	4.00	4.20
D2	3.00	3.10	3.20
D3	0.30	0.40	0.50
D4	0.90	1.00	1.10
D5	0.70	0.80	0.90
D6	0.55	0.65	0.75
D7		0.31 REF	
D8		0.40 REF	
E		4.90 BSC	
E1	4.85	4.95	5.05
E2	3.10	3.20	3.30
E3	0.00	0.10	0.20
E4	2.00	2.10	2.20
e		1.27 BSC	
e/2		0.635 BSC	
e1		0.40 REF	
H	6.00	6.15	6.30
L	0.50	0.70	0.90
L1	0.80	0.90	1.00
L2		1.10 REF	
θ	0°	4°	8°

ADDITIONAL INFORMATION

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