NJD1718, NJVNJD1718

Power Transistors

PNP Silicon DPAK For Surface Mount Applications

Designed for high−gain audio amplifier and power switching applications.

Features

- Low Collector−Emitter Saturation Voltage
- High Switching Speed
- Epoxy Meets UL 94 V−0 @ 0.125 in
- NJV 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

Rating	Symbol	Value	Unit
Collector−Base Voltage	V_{CB}	−50	Vdc
Collector−Emitter Voltage	V_{CEO}	−50	Vdc
Emitter−Base Voltage	V_{EB}	−5	Vdc
Collector Current − Continuous	I_C	−2	Adc
Collector Current − Peak	I_{CM}	−3	Adc
Base Current	I_B	−0.4	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	 15 0.1	 W W/°C
Total Device Dissipation @ T_A = 25°C (Note 1) Derate above 25°C	P_D	 1.68 0.011	 W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C
ESD − Human Body Model	HBM	3B	V
ESD − Machine Model	MM	C	V

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

THERMAL CHARACTERISTICS

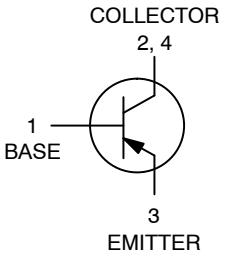
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction−to−Case Junction−to−Ambient (Note 2)	 $R_{\theta JC}$ $R_{\theta JA}$	 10 89.3	°C/W

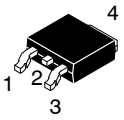
2. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

ON Semiconductor®

http://onsemi.com

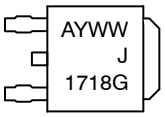
SILICON
POWER TRANSISTORS
2 AMPERES
50 VOLTS
15 WATTS





DPAK
CASE 369C
STYLE 1

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Device

ORDERING INFORMATION

Device	Package	Shipping†
NJD1718T4G	DPAK (Pb−Free)	2500 / Tape & Reel
NJVNJD1718T4G	DPAK (Pb−Free)	2500 / Tape & Reel

†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.

© Semiconductor Components Industries, LLC, 2013

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 3) (I_C = −10 mAdc, I_B = 0)	BV_{CEO}	−50		–	Vdc
Collector Cutoff Current (V_{CB} = −50 Vdc, I_E = 0)	I_{CBO}	–		−100	nAdc
Emitter Cutoff Current (V_{BE} = −5 Vdc, I_C = 0)	I_{EBO}	–		−100	nAdc
ON CHARACTERISTICS					
DC Current Gain (Note 3) (I_C = −0.5 A, V_{CE} = 2 V) (I_C = −1.5 Adc, V_{CE} = 2 Vdc)	h_{FE}	70 40		240 –	–
Collector−Emitter Saturation Voltage (Note 3) (I_C = −1 A, I_B = −0.05 A)	$V_{CE(sat)}$	–	−0.2	−0.5	Vdc
Base−Emitter Saturation Voltage (Note 3) (I_C = −1 A, I_B = −0.05 Adc)	$V_{BE(sat)}$	–	–	−1.2	Vdc
Base−Emitter On Voltage (Note 3) (I_C = −1 Adc, V_{CE} = −2 Vdc)	$V_{BE(on)}$	–	–	−1.2	Vdc
DYNAMIC CHARACTERISTICS					
Current−Gain − Bandwidth Product (Note 4) (I_C = −500 mAdc, V_{CE} = −2 Vdc, f_{test} = 10 MHz)	f_T	–	80	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz)	C_{ob}	–	33	–	pF
Switching Timers V_{CC} = −30 V, I_C = −1 A	t_{ON}	–	55	–	ns
	t_{STG}	–	320	–	
	t_f	–	40	–	

3. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≈ 2%.
4. $f_T = |h_{fe}| \bullet f_{test}$.

TYPICAL CHARACTERISTICS

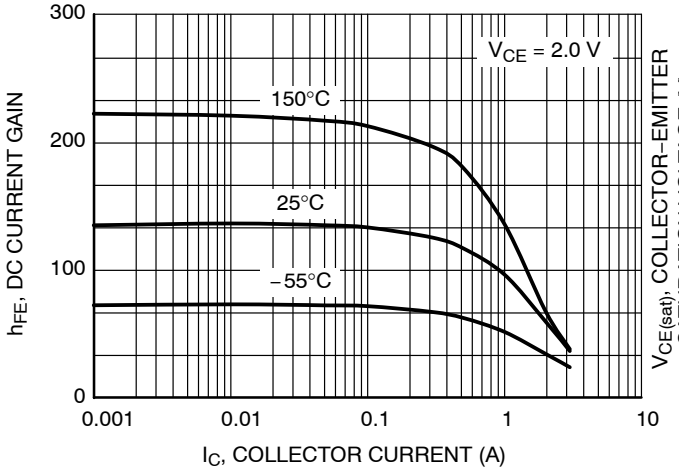


Figure 1. DC Current Gain

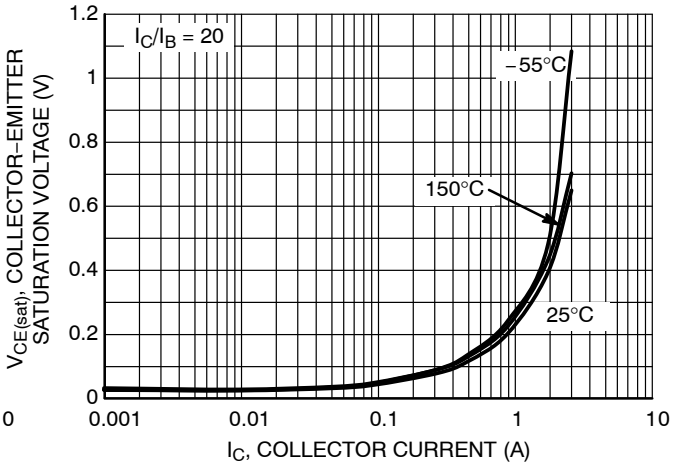


Figure 2. Collector−Emitter Saturation Voltage

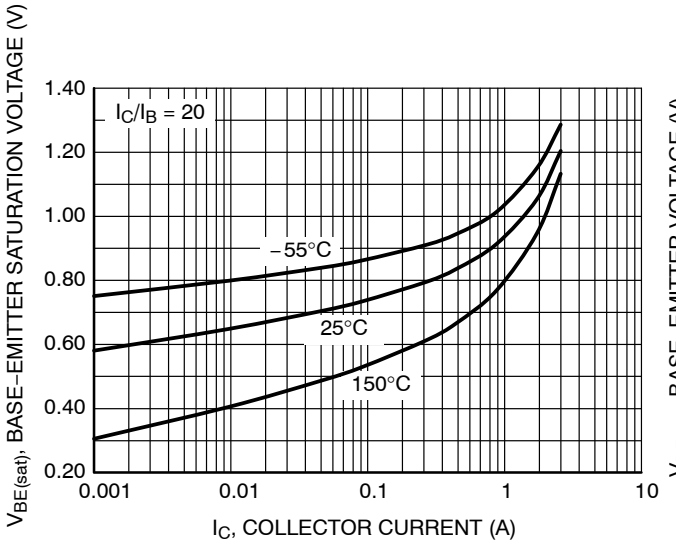


Figure 3. Base−Emitter Saturation Voltage

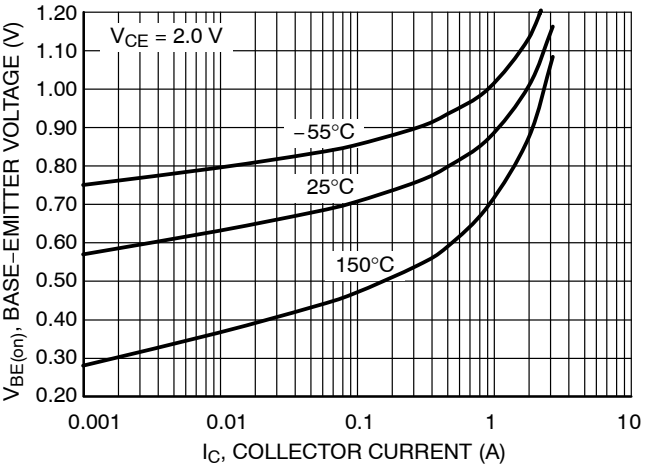


Figure 4. Base−Emitter Voltage

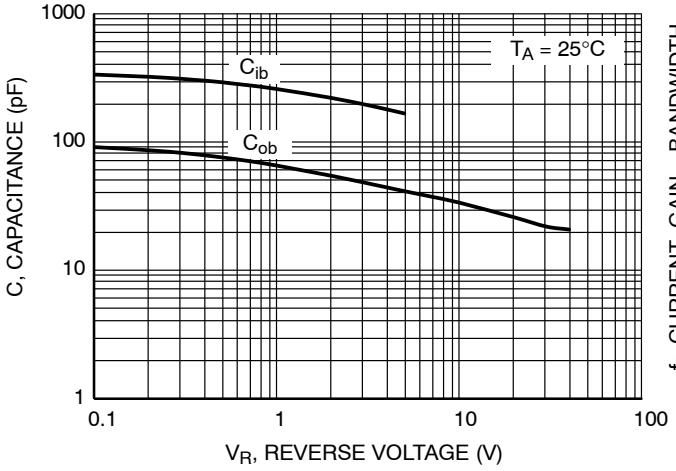


Figure 5. Capacitance

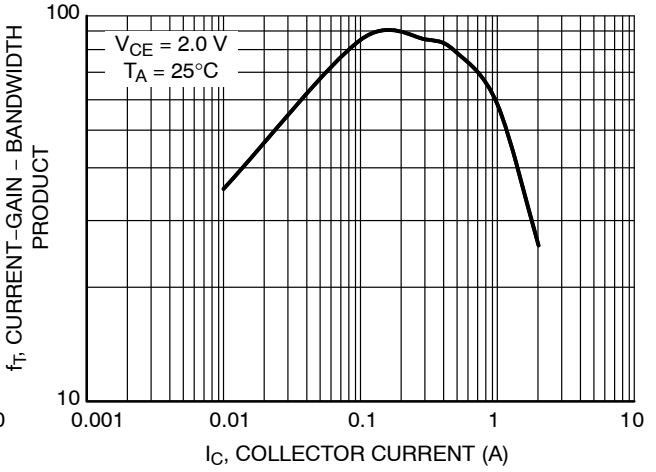


Figure 6. Current−Gain−Bandwidth Product

TYPICAL CHARACTERISTICS

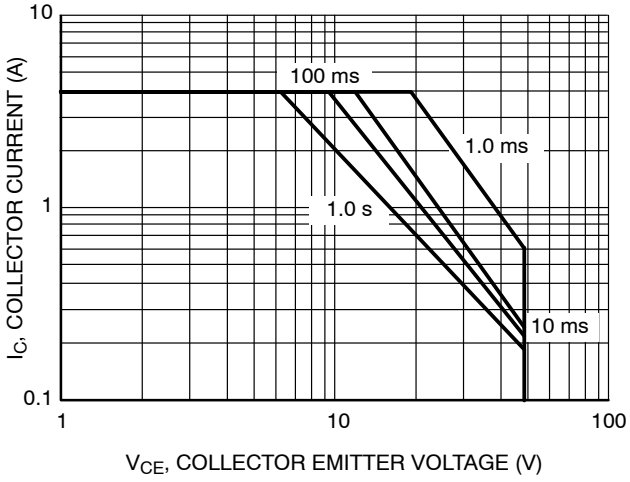


Figure 7. State Operating Area

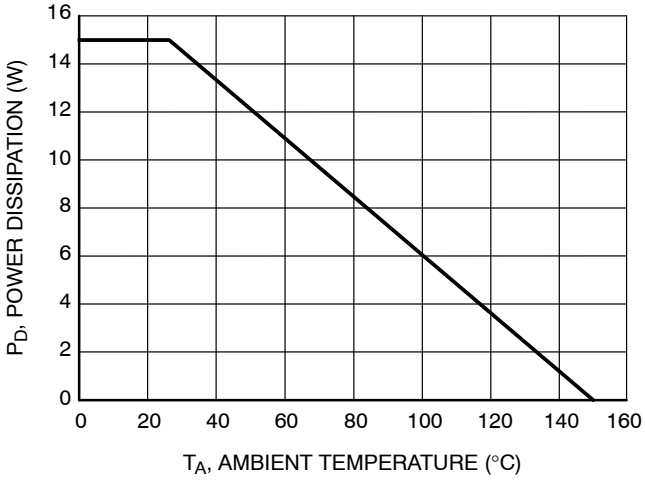


Figure 8. Power Derating

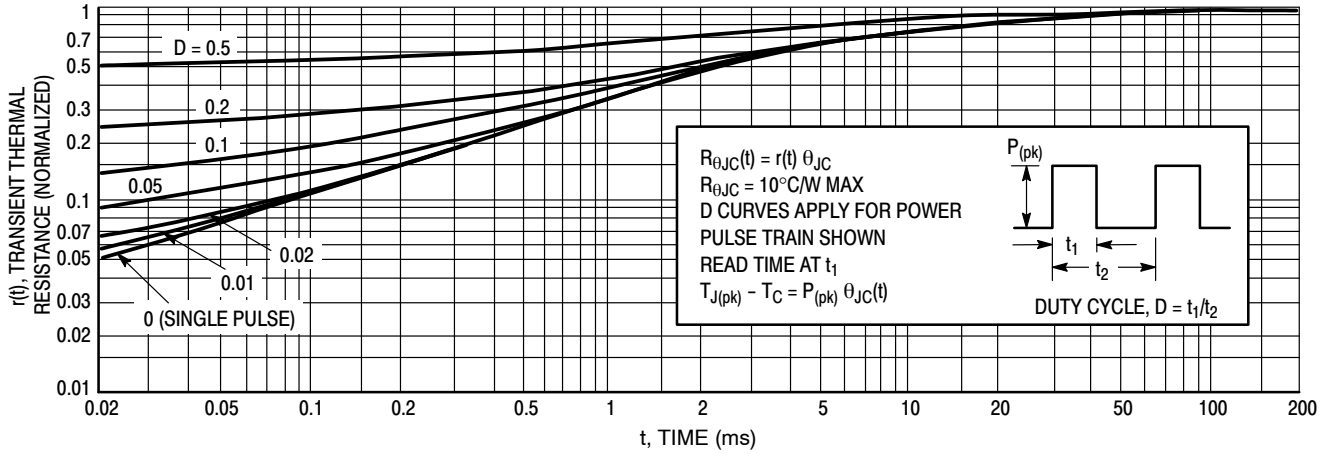
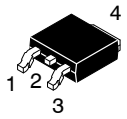


Figure 9. Thermal Response

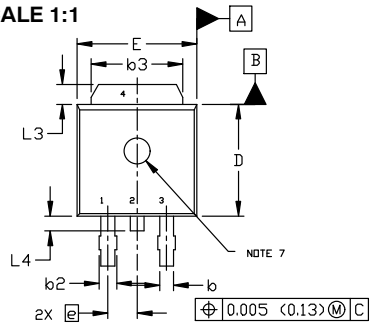
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS



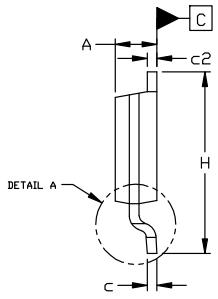
DPAK (SINGLE GAUGE)
CASE 369C
ISSUE G

DATE 31 MAY 2023

SCALE 1:1



TOP VIEW

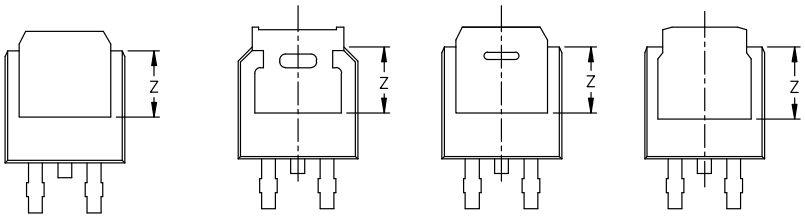


SIDE VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.

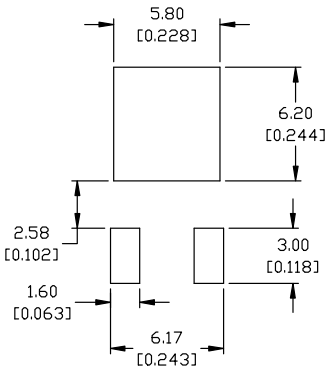
DIM	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.028	0.045	0.72	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.114 REF		2.90 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	----	0.040	---	1.01
Z	0.155	----	3.93	---



BOTTOM VIEW

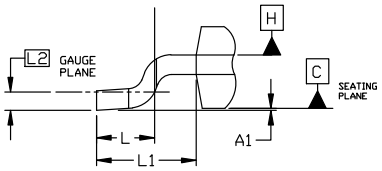
BOTTOM VIEW

ALTERNATE CONSTRUCTIONS



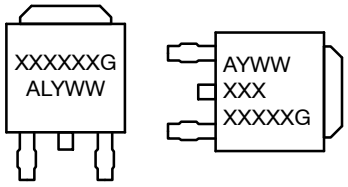
RECOMMENDED MOUNTING FOOTPRINT*

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



DETAIL A
ROTATED 90° CW

GENERIC MARKING DIAGRAM*



IC **Discrete**

XXXXXX = Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
WW = Work Week
G = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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

STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

STYLE 4:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 5:
PIN 1. GATE
2. ANODE
3. CATHODE
4. ANODE

STYLE 6:
PIN 1. MT1
2. MT2
3. GATE
4. MT2

STYLE 7:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 8:
PIN 1. N/C
2. CATHODE
3. ANODE
4. CATHODE

STYLE 9:
PIN 1. ANODE
2. CATHODE
3. RESISTOR ADJUST
4. CATHODE

STYLE 10:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

DOCUMENT NUMBER:	**98AON10527D**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	**DPAK (SINGLE GAUGE)**	**PAGE 1 OF 1**

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** 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. **onsemi** does not convey any license under its patent rights nor the rights of others.

© Semiconductor Components Industries, LLC, 2018

onsemi, , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as−is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales