

NTLGF3402P

SCHOTTKY DIODE MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Max	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	20	V
DC Blocking Voltage	V_R	20	V
Average Rectified Forward Current	I_F	2.0	A

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Max	Unit
Junction-to-Ambient – Steady State (Note 2)	$R_{\theta JA}$	110	$^\circ\text{C/W}$
Junction-to-Ambient – $t \leq 10$ s (Note 2)	$R_{\theta JA}$	58	$^\circ\text{C/W}$
Junction-to-Ambient – Steady State (Note 3)	$R_{\theta JA}$	79	$^\circ\text{C/W}$
Junction-to-Ambient – $t \leq 10$ s (Note 3)	$R_{\theta JA}$	41	$^\circ\text{C/W}$

3. Surface Mounted on FR4 Board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-20			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$			-9.0		$\text{mV}/^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16\text{ V}, V_{GS} = 0\text{ V}$	$T_J = 25^\circ\text{C}$		-1.0	μA
			$T_J = 125^\circ\text{C}$		-5.0	
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 12\text{ V}$			± 100	nA

ON CHARACTERISTICS (Note 4)

Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\ \mu\text{A}$	-0.6		-2.0	V
Gate Threshold Temperature Coefficient	$V_{GS(TH)}/T_J$			2.7		$\text{mV}/^\circ\text{C}$
Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -2.7\text{ A}$		110	140	$\text{m}\Omega$
		$V_{GS} = -2.5\text{ V}, I_D = -1.0\text{ A}$		190	225	
Forward Transconductance	g_{FS}	$V_{DS} = -10\text{ V}, I_D = -2.7\text{ A}$		4.8		S

CHARGES AND CAPACITANCES

Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = -10\text{ V}$		230	350	pF
Output Capacitance	C_{OSS}			105	225	
Reverse Transfer Capacitance	C_{RSS}			40	75	
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5\text{ V}, V_{DS} = -10\text{ V}, I_D = -2.7\text{ A}$		3.8	10	nC
Threshold Gate Charge	$Q_{G(TH)}$			0.32		
Gate-to-Source Charge	Q_{GS}			0.7		
Gate-to-Drain Charge	Q_{GD}			1.6		

SWITCHING CHARACTERISTICS (Note 5)

Turn-On Delay Time	$t_{d(ON)}$	$V_{GS} = -4.5\text{ V}, V_{DD} = -16\text{ V}, I_D = -2.7\text{ A}, R_G = 2.4\ \Omega$		6.2	15	ns
Rise Time	t_r			22	30	
Turn-Off Delay Time	$t_{d(OFF)}$			25	45	
Fall Time	t_f			34	60	

4. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.

5. Switching characteristics are independent of operating junction temperatures.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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DRAIN-SOURCE DIODE CHARACTERISTICS

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Diode Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = -1.1\text{ A}$		-0.8	-1.2	V
Reverse Recovery Time	t_{RR}	$V_{GS} = 0\text{ V}, I_S = -1.1\text{ A},$ $di_S/dt = 100\text{ A}/\mu\text{s}$		53		ns
Charge Time	t_a			15		
Discharge Time	t_b			38		
Reverse Recovery Charge	Q_{RR}			37		

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Instantaneous Forward Voltage	V_F	$I_F = 0.1\text{ A}$		0.32	0.34	V
		$I_F = 1.0\text{ A}$		0.36	0.39	
Maximum Instantaneous Reverse Current	I_R	$V_R = 5\text{ V}, T_J = 100^\circ\text{C}$			12	mA
		$V_R = 10\text{ V}$		70		μA
		$V_R = 20\text{ V}$		225		

6. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.

7. Switching characteristics are independent of operating junction temperatures.

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TYPICAL P-CHANNEL PERFORMANCE CURVES

($T_J = 25^\circ\text{C}$ unless otherwise noted)

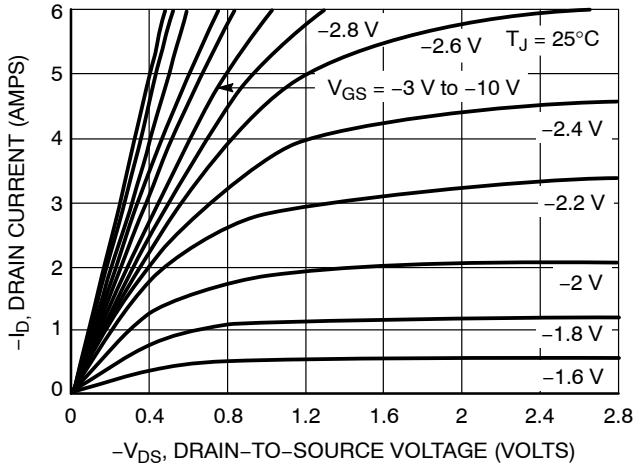


Figure 1. On-Region Characteristics

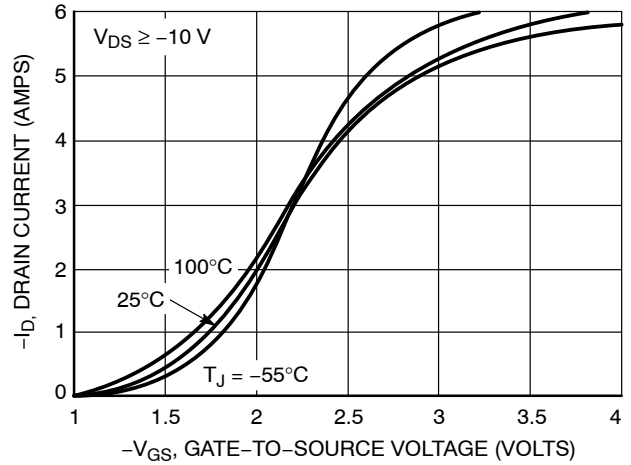


Figure 2. Transfer Characteristics

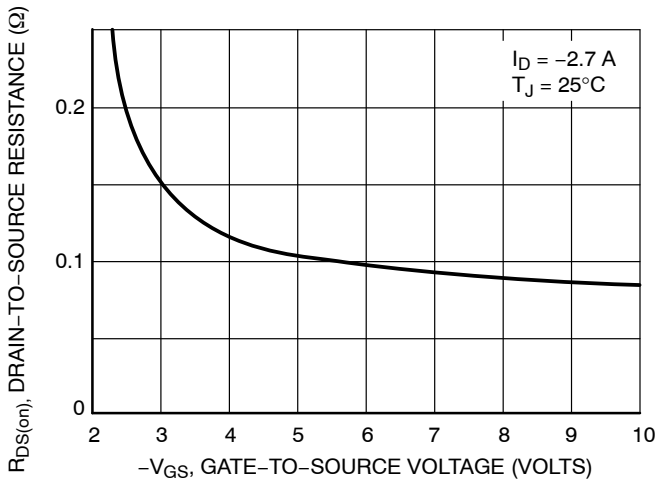


Figure 3. On-Resistance vs. Gate-to-Source Voltage

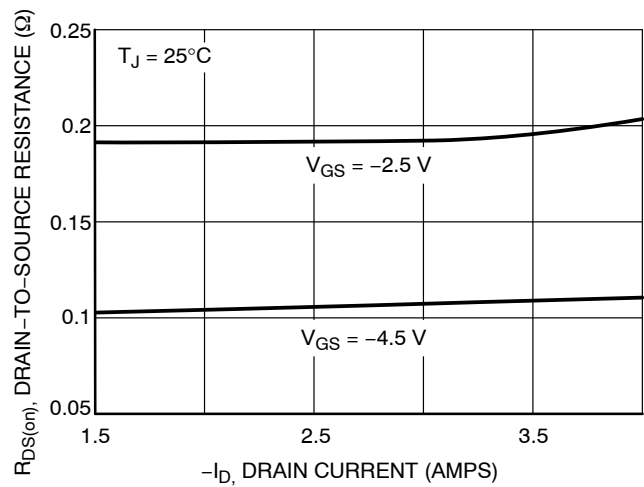


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

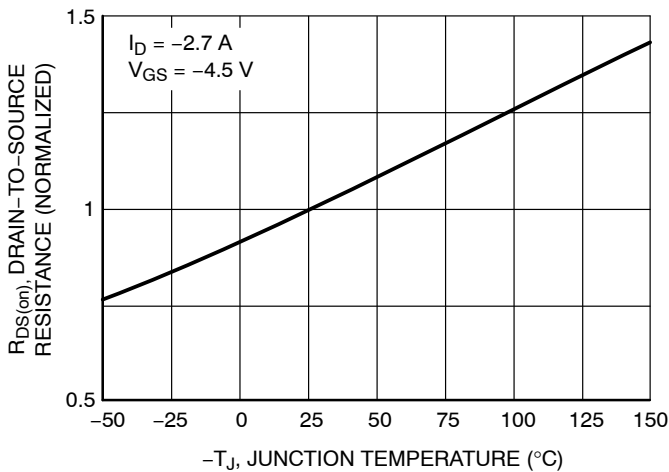


Figure 5. On-Resistance Variation with Temperature

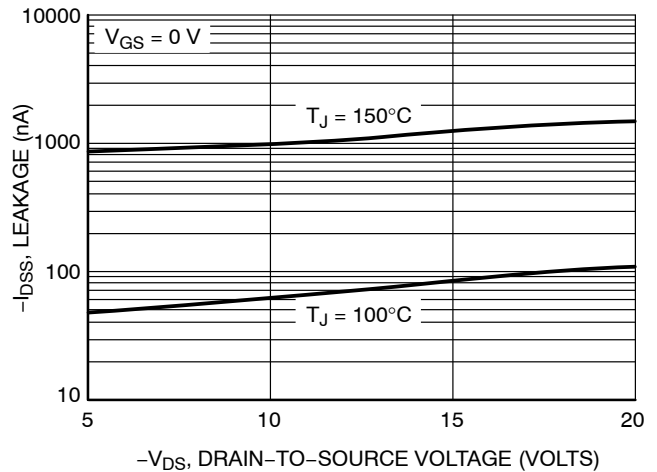


Figure 6. Drain-to-Source Leakage Current vs. Voltage

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TYPICAL P-CHANNEL PERFORMANCE CURVES

($T_J = 25^\circ\text{C}$ unless otherwise noted)

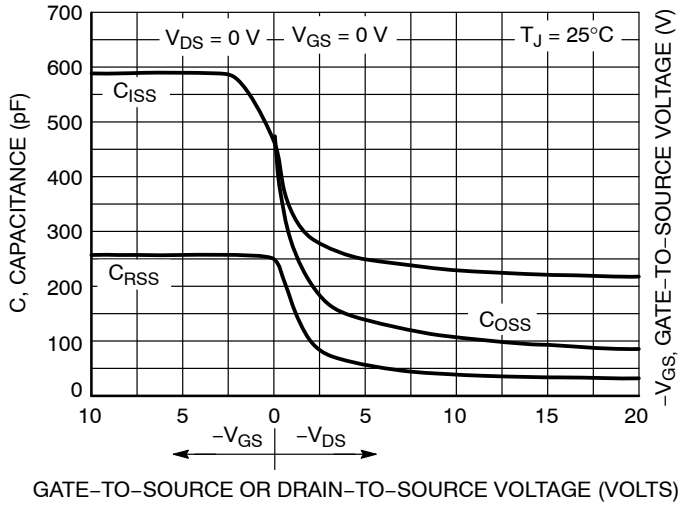


Figure 7. Capacitance Variation

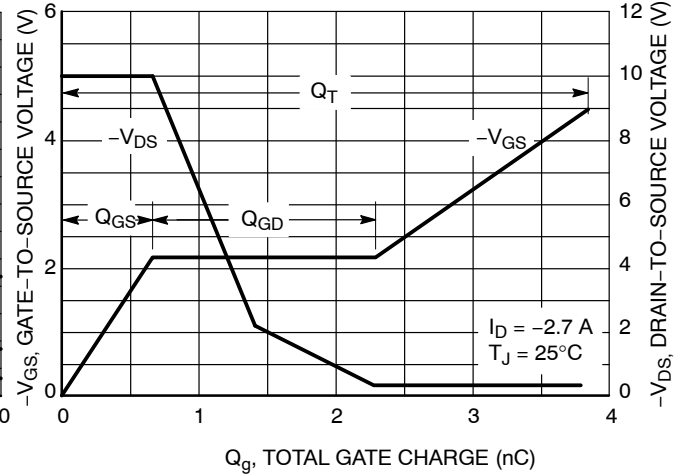


Figure 8. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

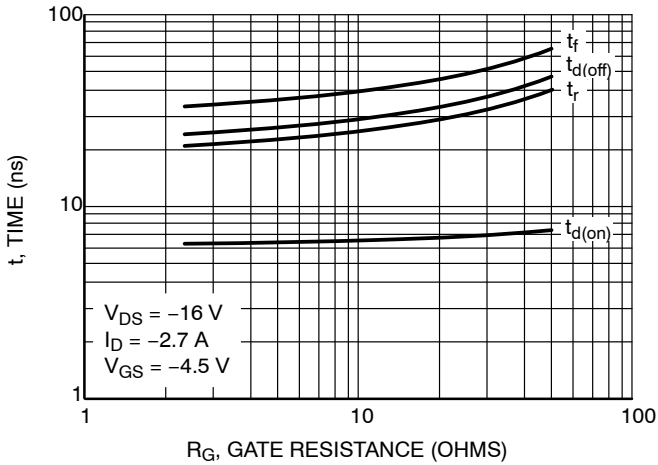


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

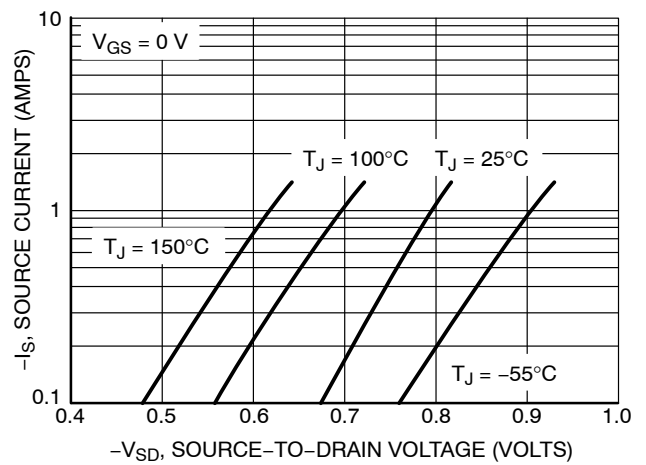


Figure 10. Diode Forward Voltage vs. Current

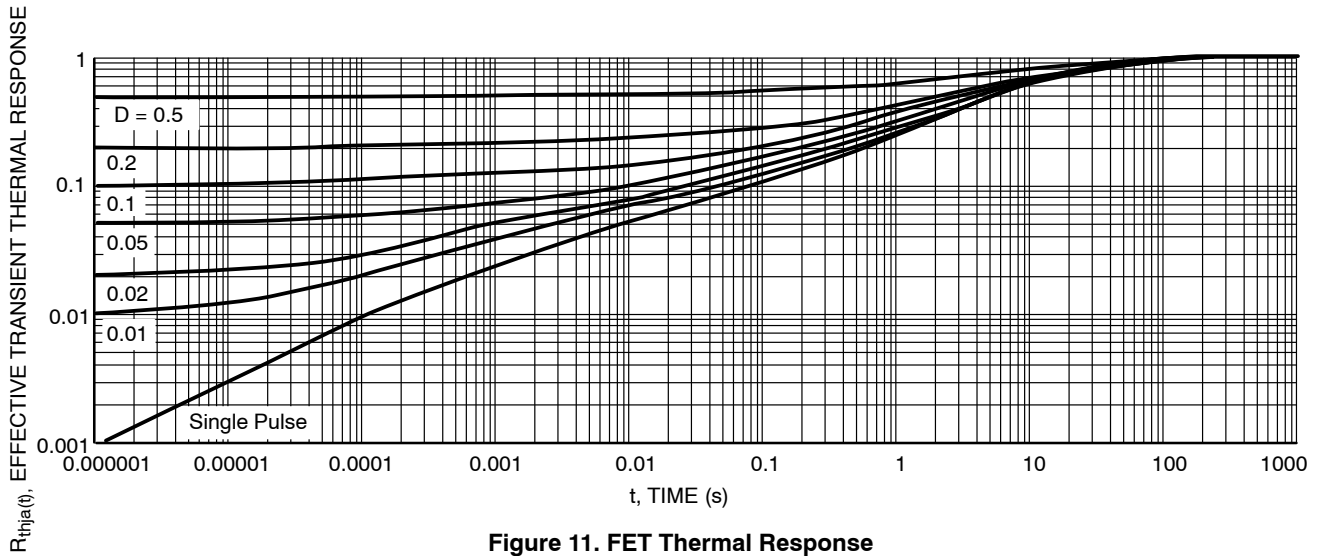


Figure 11. FET Thermal Response

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TYPICAL SCHOTTKY PERFORMANCE CURVES ($T_J = 25^\circ\text{C}$ unless otherwise noted)

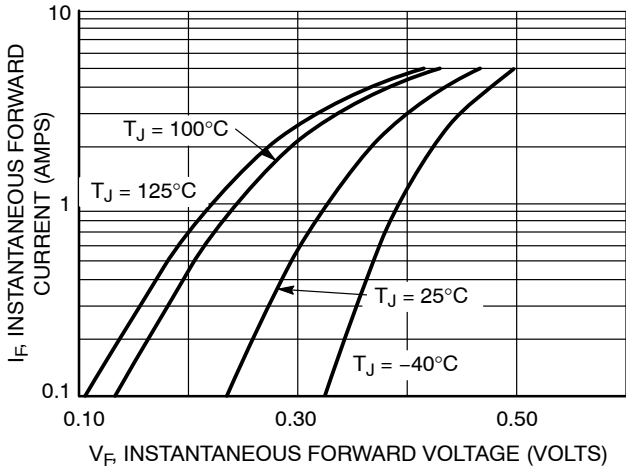


Figure 12. Typical Forward Voltage

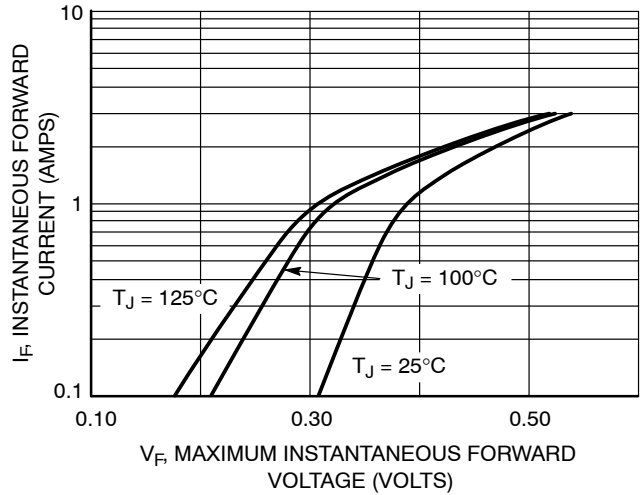


Figure 13. Maximum Forward Voltage

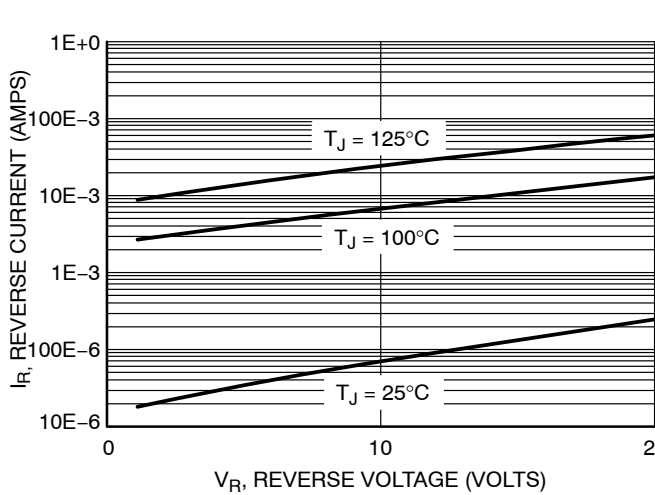


Figure 14. Typical Reverse Current

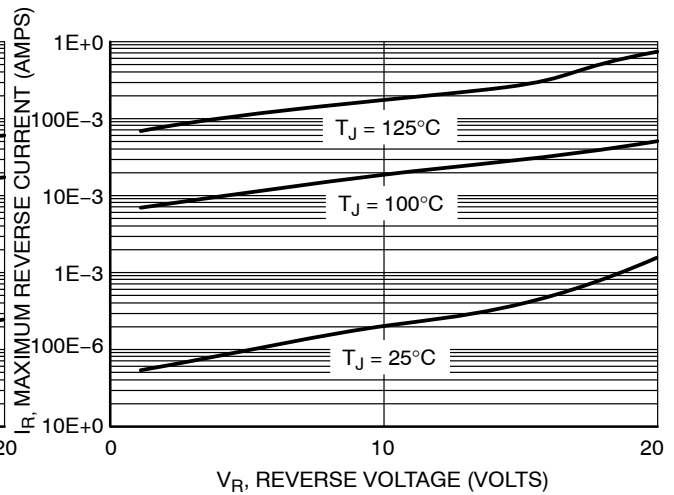


Figure 15. Maximum Reverse Current

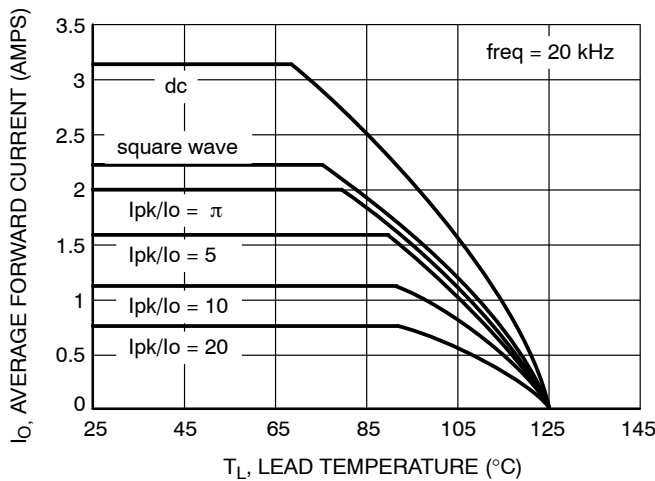


Figure 16. Current Derating

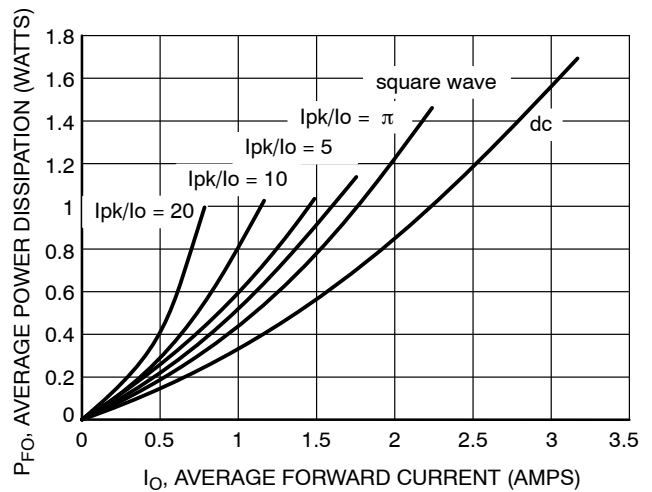


Figure 17. Forward Power Dissipation

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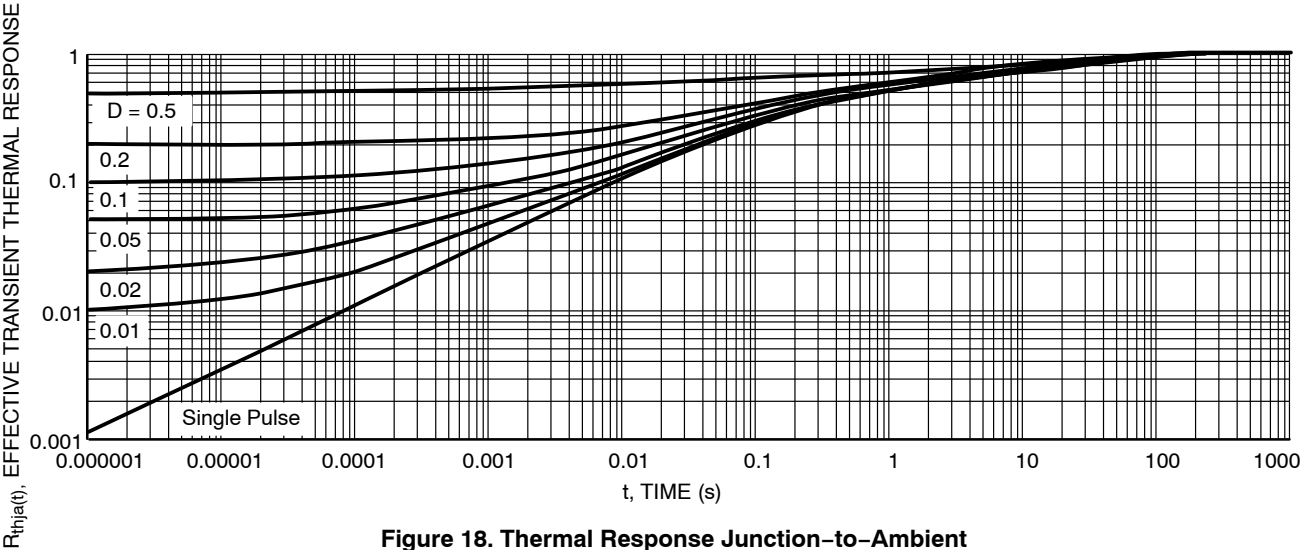


Figure 18. Thermal Response Junction-to-Ambient

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MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

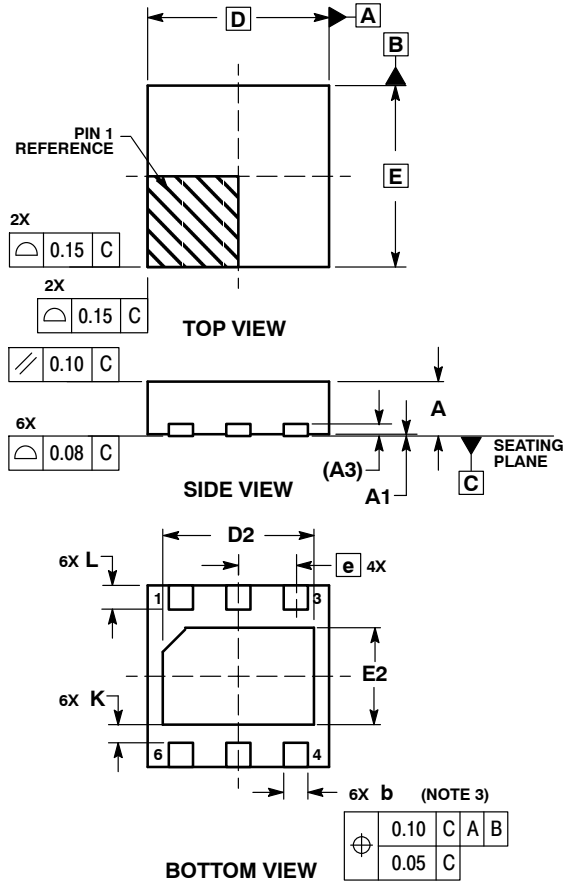
ON Semiconductor®



1
SCALE 2:1

DFN6 3*3 MM, 0.95 PITCH
CASE 506AH-01
ISSUE O

DATE 17 NOV 2004

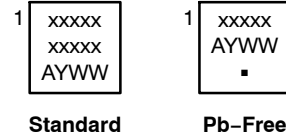


NOTES:

1. DIMENSIONS AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 MM FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

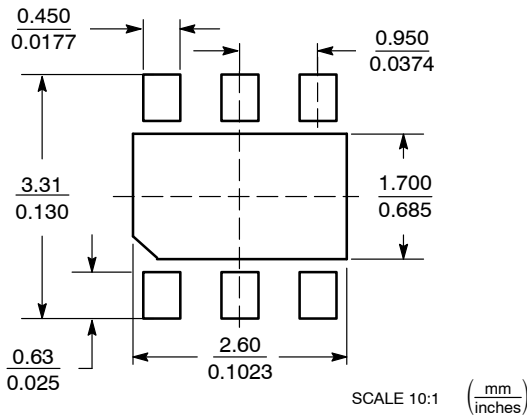
MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0.00	0.03	0.05
A3	0.20 REF		
b	0.35	0.40	0.45
D	3.00 BSC		
D2	2.40	2.50	2.60
E	3.00 BSC		
E2	1.50	1.60	1.70
e	0.95 BSC		
K	0.21	---	---
L	0.30	0.40	0.50

GENERIC MARKING DIAGRAM*



- xxxxx = Specific Device Code
- A = Assembly Location
- Y = Year
- WW = Work Week
- = Pb-Free Package

SOLDERING FOOTPRINT*



*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.

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

DOCUMENT NUMBER:	98AON19891D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	DFN6 3*3 MM, 0.95 PITCH, SINGLE FLAG	PAGE 1 OF 1

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