

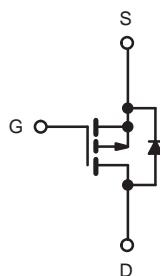
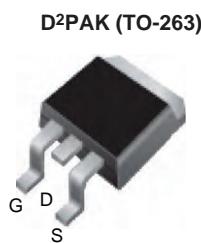
IPB80P03P4L-07-VB Datasheet

P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^d	Q _g (Typ.)
- 30	0.008 at V _{GS} = - 10 V	- 75	56 nC
	0.011 at V _{GS} = - 4.5 V	- 65	

FEATURES

- Halogen-free
- TrenchFET® Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested


RoHS
 COMPLIANT


P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	- 30	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C)	I _D	- 75	A
		- 65	
		- 55 ^{a, b}	
		- 45 ^{a, b}	
		- 200	
Pulsed Drain Current	I _{DM}	- 4.1	A
Continuous Source-Drain Diode Current	I _S	- 2.2 ^{a, b}	
		- 75	
Avalanche Current	I _{AS}	280	mJ
Single-Pulse Avalanche Energy	P _D	250	W
		205	
		3.7 ^{a, b}	
		2.7 ^{a, b}	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{a, c}	R _{thJA}	38	46	°C/W
Maximum Junction-to-Foot	R _{thJF}	20	25	

Notes:

- Surface mounted on 1" x 1" FR4 board.
- t = 10 s.
- Maximum under Steady State conditions is 85 °C/W.
- Based on T_C = 25 °C.

SPECIFICATIONS $T_J = 25^\circ\text{C}$, unless otherwise noted

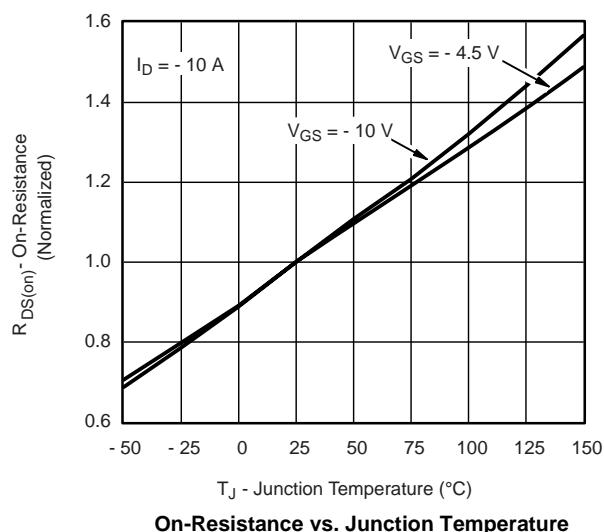
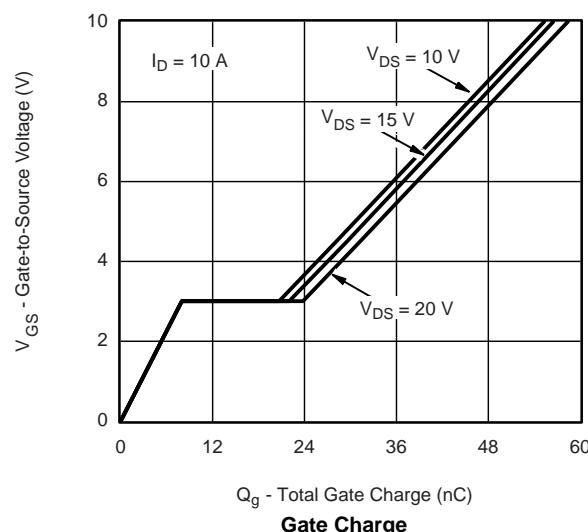
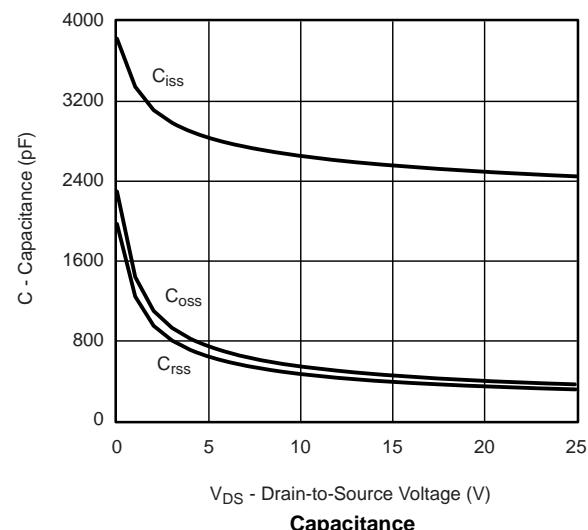
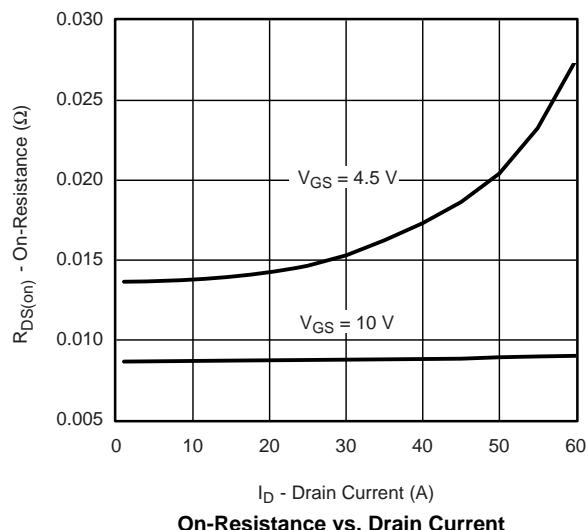
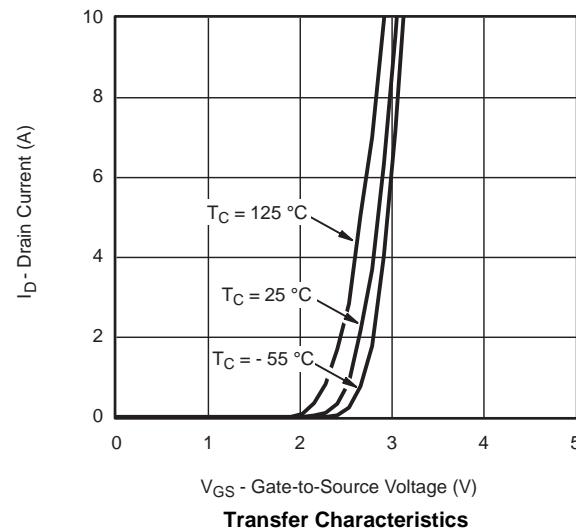
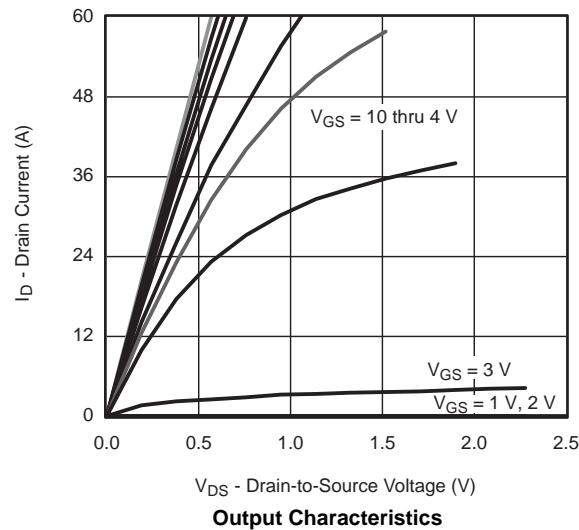
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}, I_D = -250 \mu\text{A}$	-30			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -250 \mu\text{A}$		-34		
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			5.3		$\text{mV}/^\circ\text{C}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1.0		-2.5	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 25 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}$			-1	
		$V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-5	μA
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq -10 \text{ V}, V_{GS} = -10 \text{ V}$	-30			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -10 \text{ V}, I_D = -10 \text{ A}$		0.008		
		$V_{GS} = -4.5 \text{ V}, I_D = -8 \text{ A}$		0.011		Ω
Forward Transconductance ^a	g_{fs}	$V_{DS} = -10 \text{ V}, I_D = -10 \text{ A}$		28		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		4550		
Output Capacitance	C_{oss}			1455		
Reverse Transfer Capacitance	C_{rss}			570		pF
Total Gate Charge	Q_g	$V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -10 \text{ A}$		115		
Gate-Source Charge	Q_{gs}	$V_{DS} = -15 \text{ V}, V_{GS} = -4.5 \text{ V}, I_D = -10 \text{ A}$		56		
Gate-Drain Charge	Q_{gd}			8		nC
Gate Resistance	R_g	$f = 1 \text{ MHz}$	0.5	2.2	4.4	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, R_L = 1.5 \Omega$ $I_D \geq -10 \text{ A}, V_{GEN} = -10 \text{ V}, R_g = 1 \Omega$		13	25	
Rise Time	t_r			12	24	
Turn-Off Delay Time	$t_{d(off)}$			40	70	
Fall Time	t_f			9	18	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, R_L = 1.5 \Omega$ $I_D \geq -10 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_g = 1 \Omega$		48	80	
Rise Time	t_r			92	160	
Turn-Off Delay Time	$t_{d(off)}$			34	60	
Fall Time	t_f			19	35	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25^\circ\text{C}$			-4.1	
Pulse Diode Forward Current	I_{SM}				-60	A
Body Diode Voltage	V_{SD}	$I_S = -3 \text{ A}, V_{GS} = 0 \text{ V}$		-0.75	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -10 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}, T_J = 25^\circ\text{C}$		27	45	ns
Body Diode Reverse Recovery Charge	Q_{rr}			16	27	nC
Reverse Recovery Fall Time	t_a			12		
Reverse Recovery Rise Time	t_b			15		ns

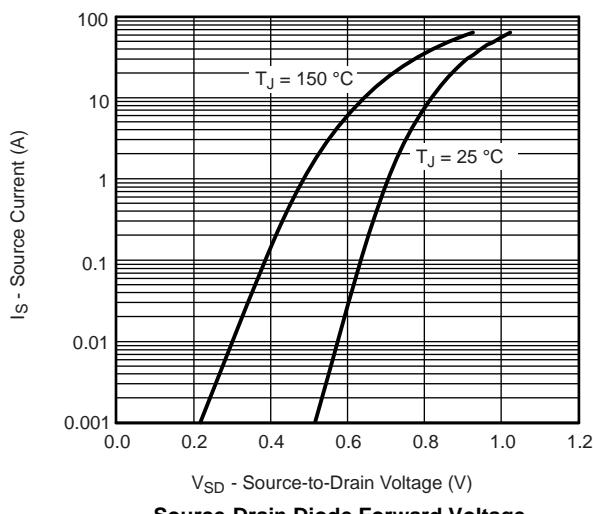
Notes:

a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

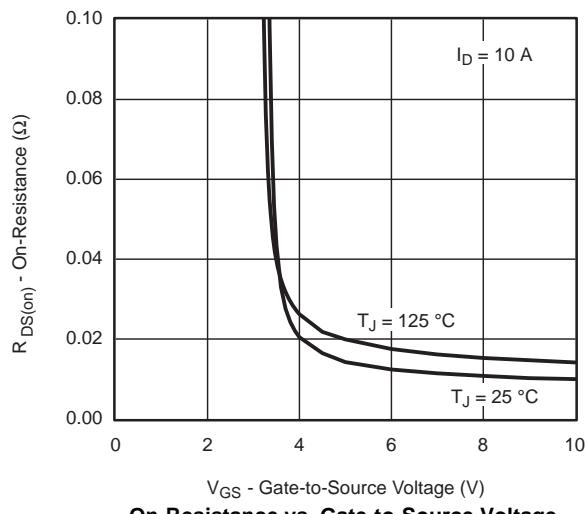
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

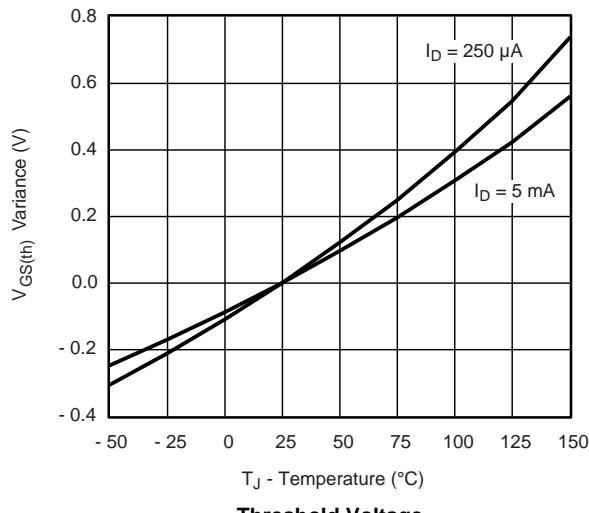
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


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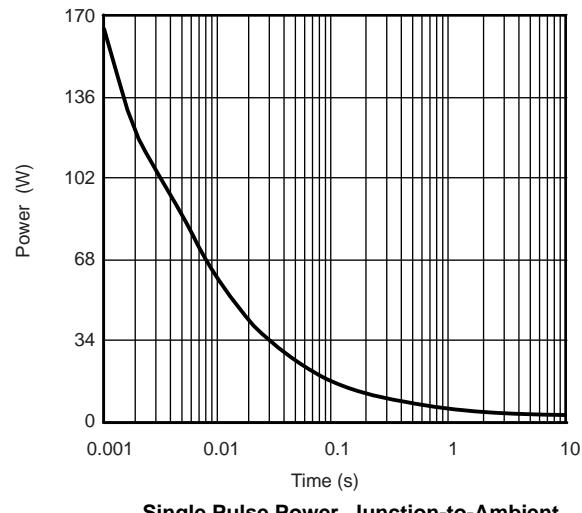
Source-Drain Diode Forward Voltage



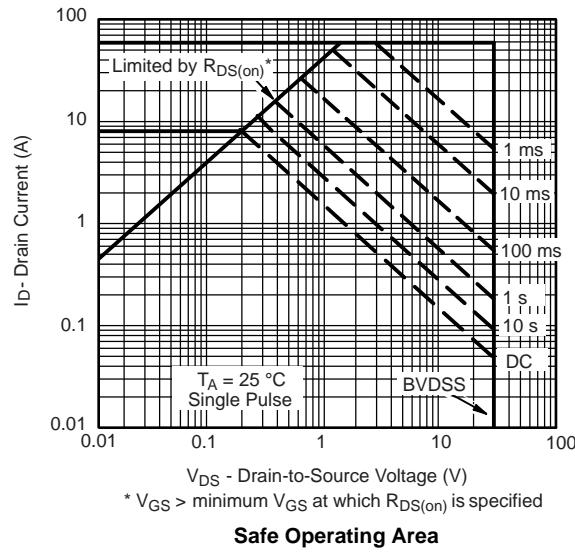
On-Resistance vs. Gate-to-Source Voltage



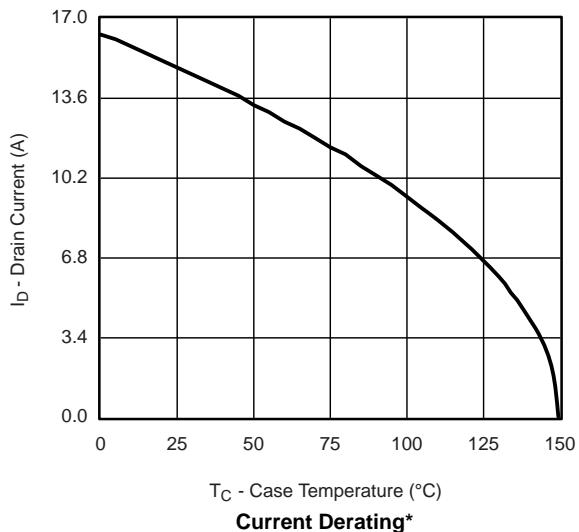
Threshold Voltage

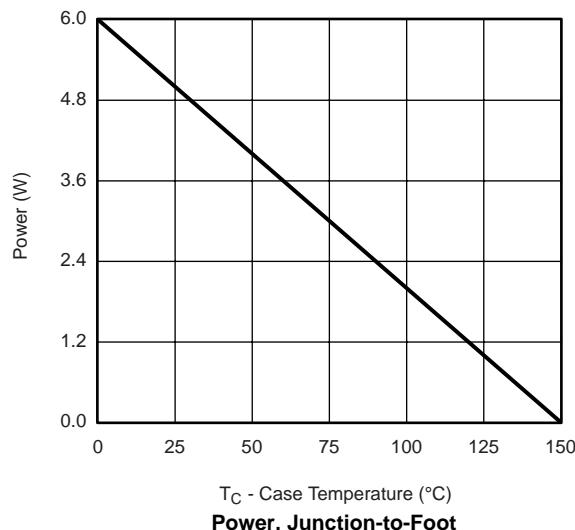


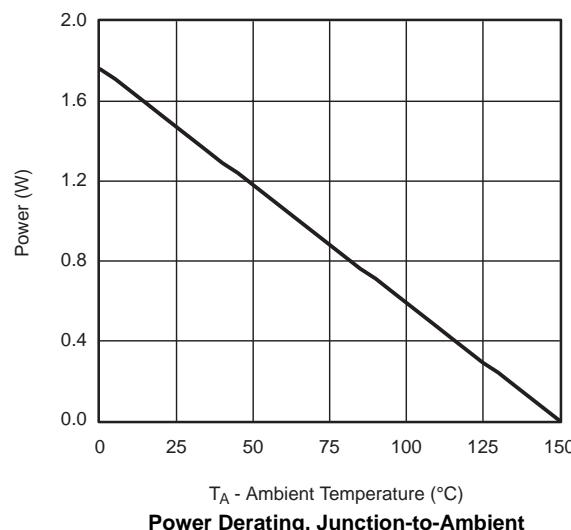
Single Pulse Power, Junction-to-Ambient



Safe Operating Area

MOSFET TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

 T_C - Case Temperature (°C)

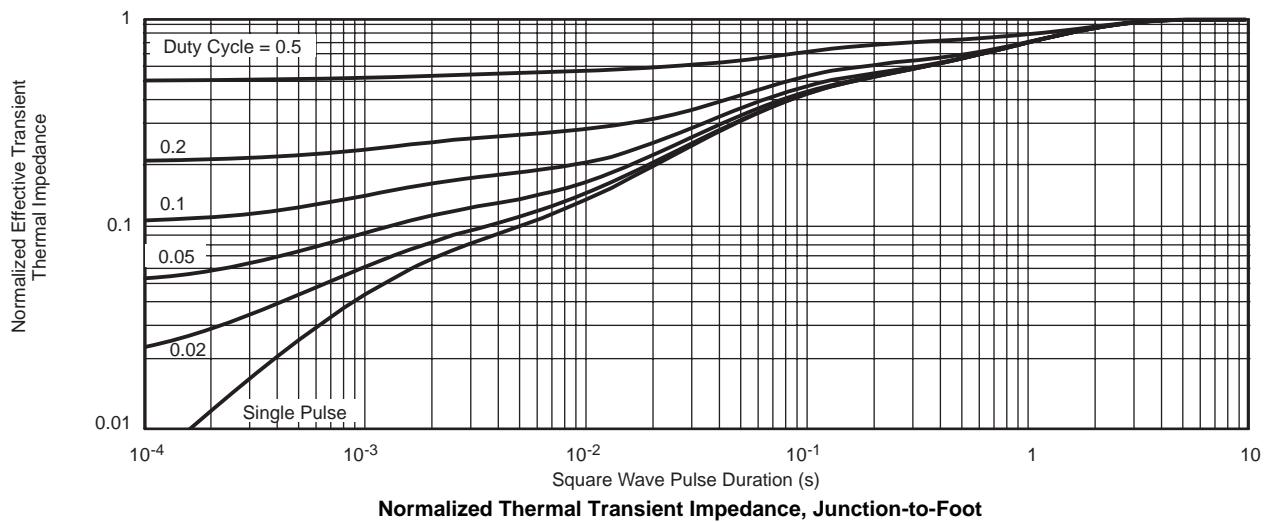
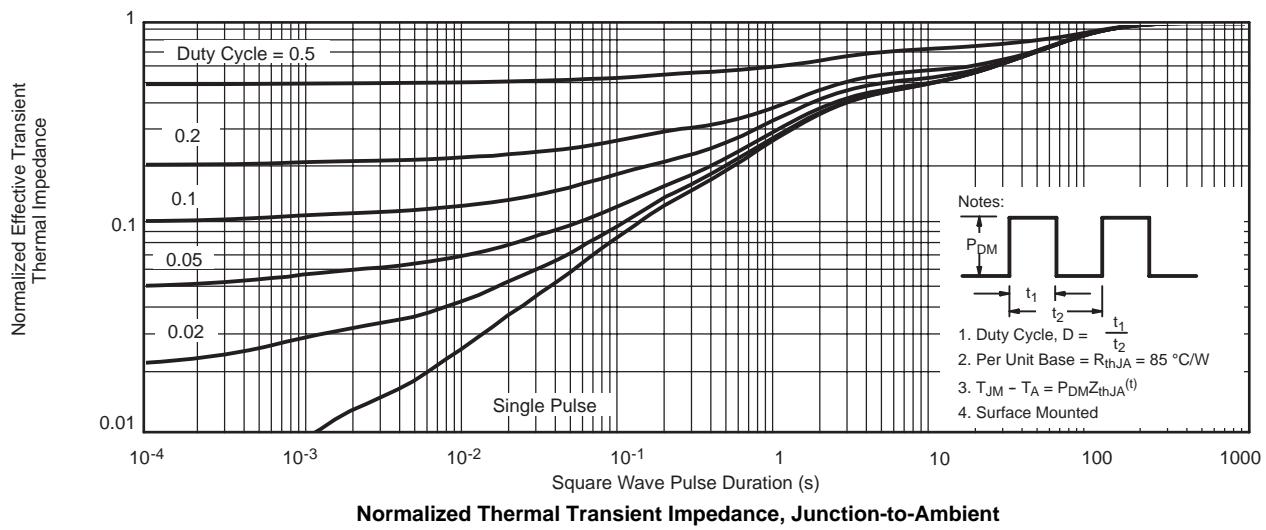
Current Derating*

 T_C - Case Temperature (°C)

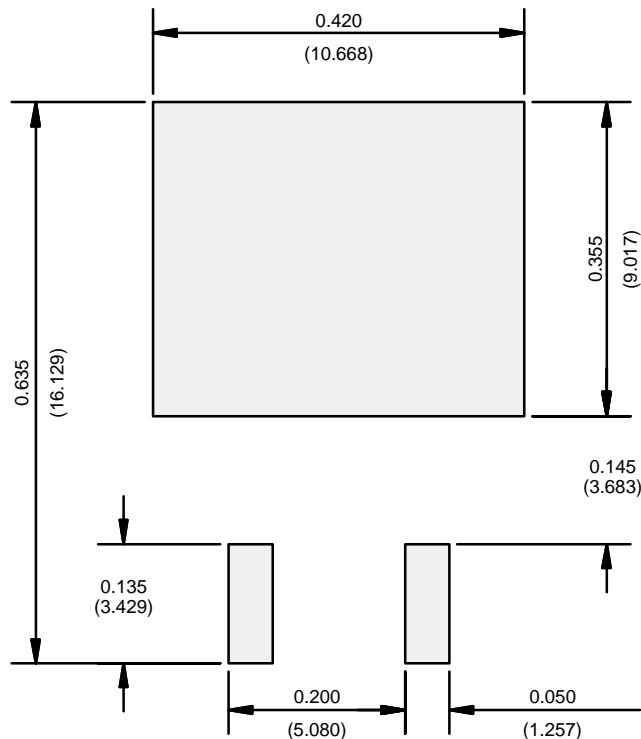
Power, Junction-to-Foot

 T_A - Ambient Temperature (°C)

Power Derating, Junction-to-Ambient

* The power dissipation P_D is based on $T_{J(max)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



RECOMMENDED MINIMUM PADS FOR D²PAK: 3-Lead

Recommended Minimum Pads
Dimensions in Inches/(mm)

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