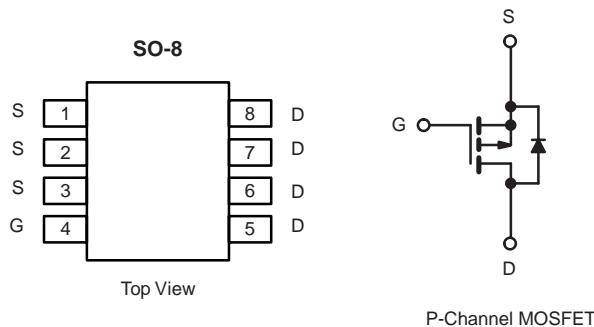


P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^d	Q _g (Typ.)
- 30	0.011 at V _{GS} = - 10 V	- 11.6	22 nC
	0.012 at V _{GS} = - 4.5 V	- 10	

FEATURES

- Halogen-free According to IEC 61249-2-21 Available
- TrenchFET® Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested



APPLICATIONS

- Load Switches
 - Notebook PCs
 - Desktop PCs

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)	T _C = 25 °C	I _D	- 11.6	A
	T _C = 70 °C		- 10.5	
	T _A = 25 °C		- 8.7 ^{a, b}	
	T _A = 70 °C		- 7.7 ^{a, b}	
Pulsed Drain Current		I _{DM}	- 40	A
Continuous Source-Drain Diode Current	T _C = 25 °C	I _S	- 4.6	
	T _A = 25 °C		2.0 ^{a, b}	
Avalanche Current		I _{AS}	- 20	mJ
Single-Pulse Avalanche Energy		E _{AS}	20	
Maximum Power Dissipation	T _C = 25 °C	P _D	5.6	W
	T _C = 70 °C		3.6	
	T _A = 25 °C		2.5 ^{a, b}	
	T _A = 70 °C		1.6 ^{a, b}	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Typical	Maximum
Maximum Junction-to-Ambient ^{a, c}	t ≤ 10 s	R _{thJA}	39	50
Maximum Junction-to-Foot	Steady State	R _{thJF}	18	22

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

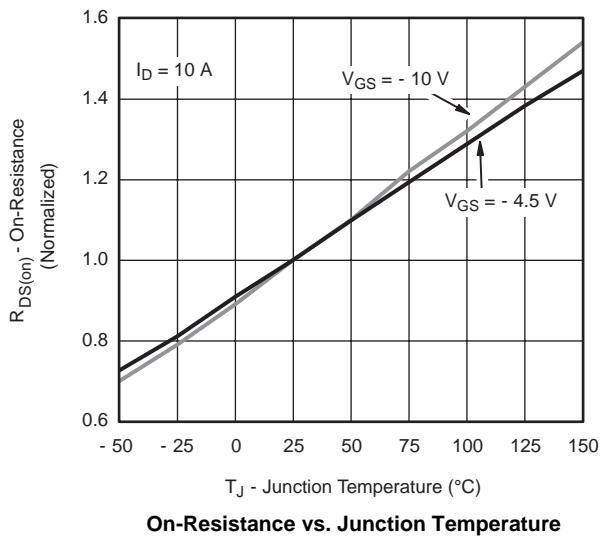
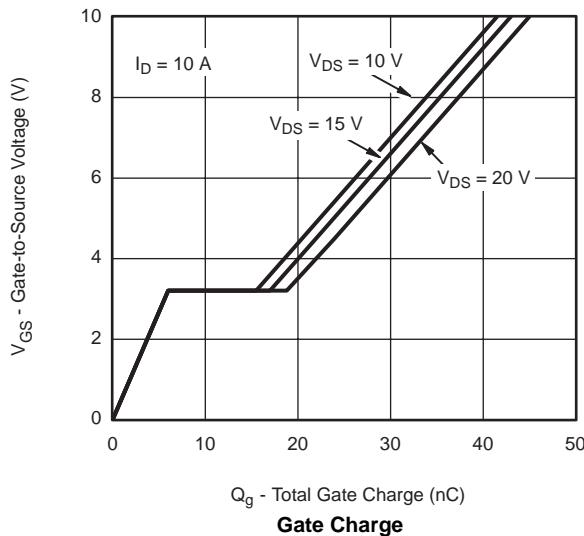
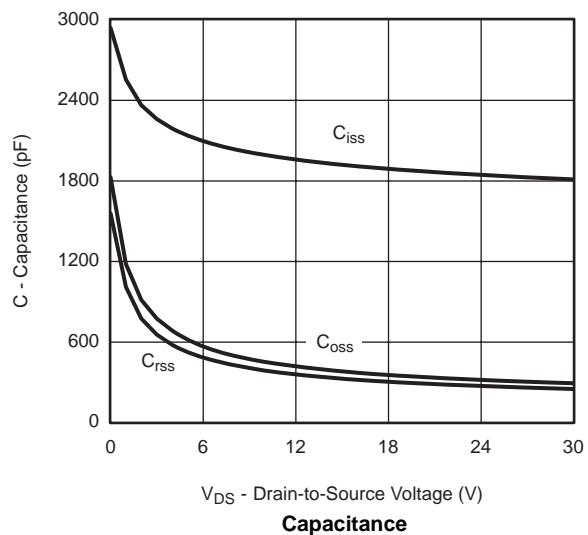
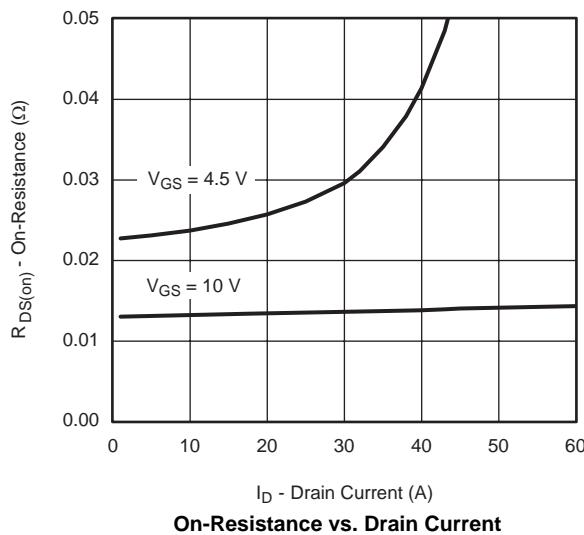
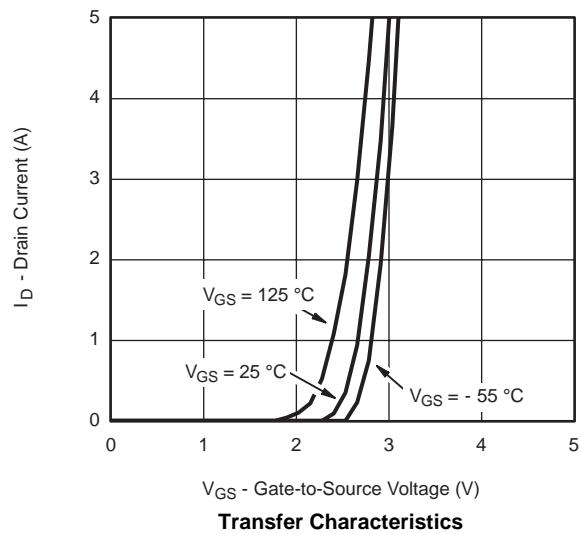
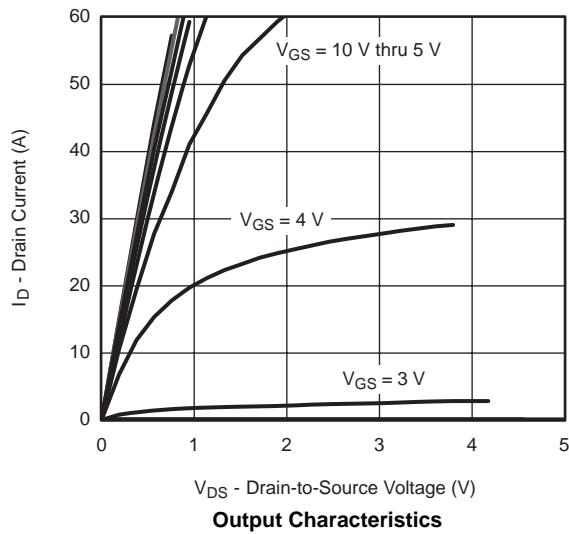
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}$, $I_D = -250 \mu\text{A}$	-30			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -250 \mu\text{A}$		-31		mV/°C
$V_{GS(\text{th})}$ Temperature Coefficient	$\Delta V_{GS(\text{th})}/T_J$			5.5		
Gate-Source Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}$, $I_D = -250 \mu\text{A}$	-1.0		-3.0	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	μA
		$V_{DS} = -30 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_J = 55^\circ\text{C}$			-5	
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{DS} \geq -10 \text{ V}$, $V_{GS} = -10 \text{ V}$	-30			A
Drain-Source On-State Resistance ^a	$R_{DS(\text{on})}$	$V_{GS} = -10 \text{ V}$, $I_D = -10 \text{ A}$		0.011		Ω
		$V_{GS} = -4.5 \text{ V}$, $I_D = -7 \text{ A}$		0.012		
Forward Transconductance ^a	g_{fs}	$V_{DS} = -10 \text{ V}$, $I_D = -10 \text{ A}$		23		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = -15 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$		1960		pF
Output Capacitance	C_{oss}			380		
Reverse Transfer Capacitance	C_{rss}			325		
Total Gate Charge	Q_g	$V_{DS} = -15 \text{ V}$, $V_{GS} = -10 \text{ V}$, $I_D = -10 \text{ A}$	43	65		nC
Gate-Source Charge	Q_{gs}	$V_{DS} = -15 \text{ V}$, $V_{GS} = -4.5 \text{ V}$, $I_D = -10 \text{ A}$	22	33		
Gate-Drain Charge	Q_{gd}		6			
Gate Resistance	R_g		11			
Turn-On Delay Time	$t_{d(\text{on})}$	$V_{DD} = -15 \text{ V}$, $R_L = 3 \Omega$ $I_D \geq -5 \text{ A}$, $V_{GEN} = -10 \text{ V}$, $R_g = 1 \Omega$	0.3	1.3	2.5	Ω
Rise Time	t_r		11	22		ns
Turn-Off Delay Time	$t_{d(\text{off})}$		13	25		
Fall Time	t_f		32	50		
Turn-On Delay Time	$t_{d(\text{on})}$		9	18		
Rise Time	t_r		44	70		
Turn-Off Delay Time	$t_{d(\text{off})}$		100	160		
Fall Time	t_f		28	50		
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25^\circ\text{C}$			-4.6	A
Pulse Diode Forward Current	I_{SM}				-50	
Body Diode Voltage	V_{SD}	$I_S = -2 \text{ A}$, $V_{GS} = 0 \text{ V}$		-0.75	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -2 \text{ A}$, $dl/dt = 100 \text{ A}/\mu\text{s}$, $T_J = 25^\circ\text{C}$		28	45	ns
Body Diode Reverse Recovery Charge	Q_{rr}			20	40	nC
Reverse Recovery Fall Time	t_a			13		ns
Reverse Recovery Rise Time	t_b			15		

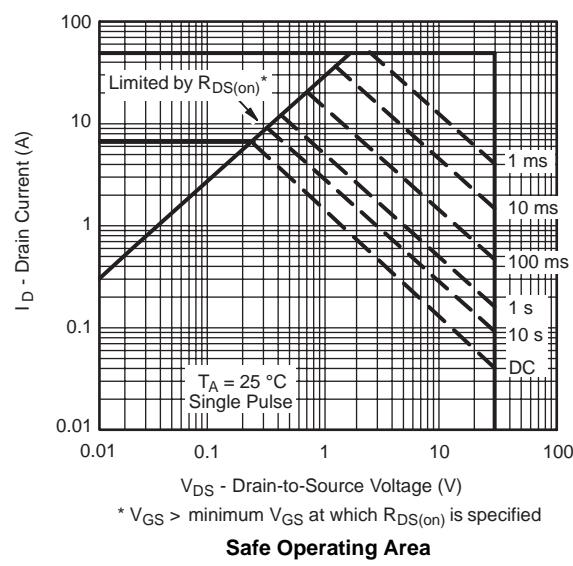
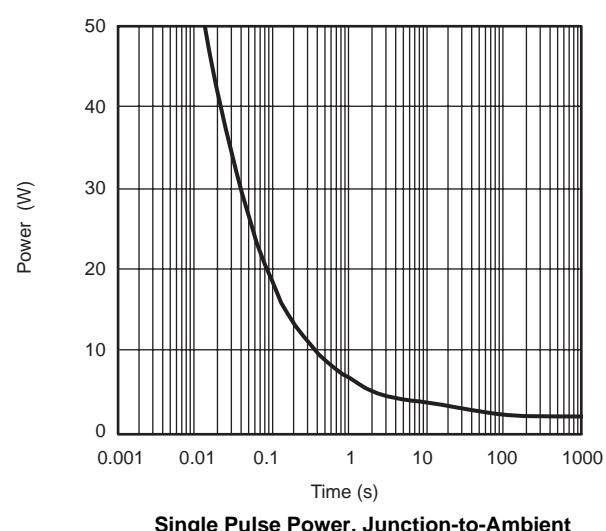
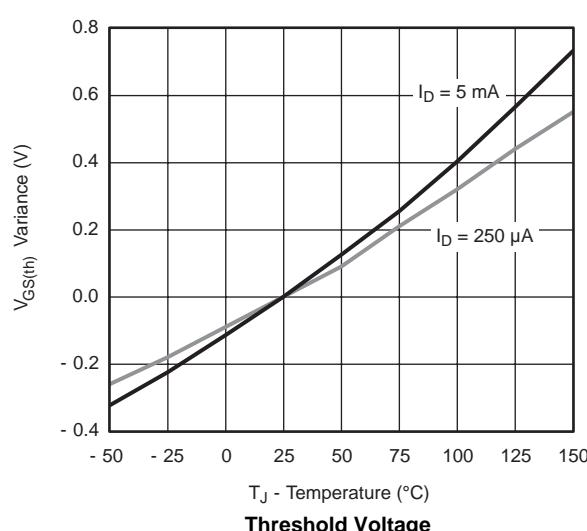
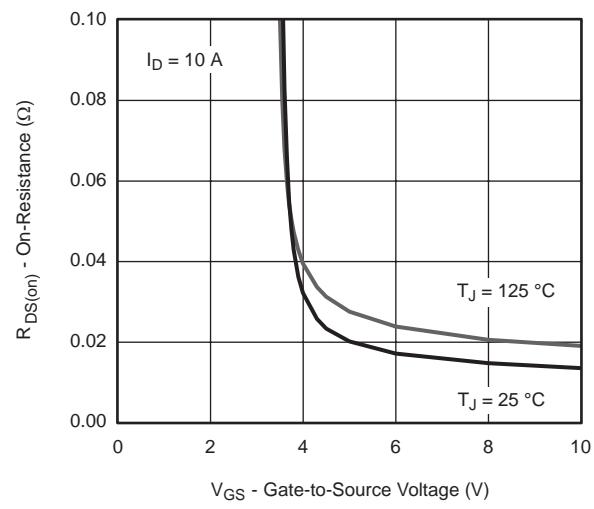
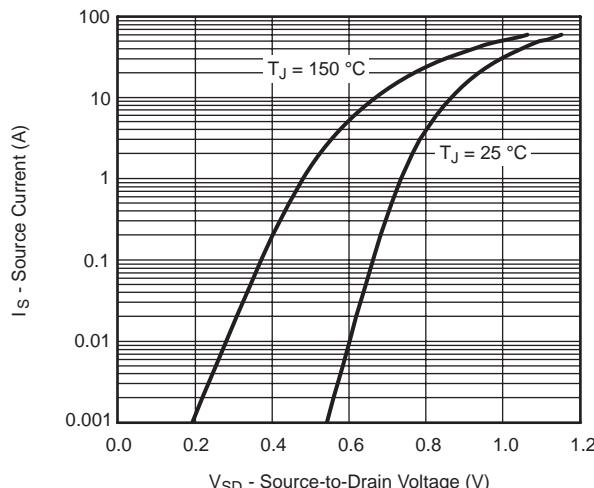
Notes:

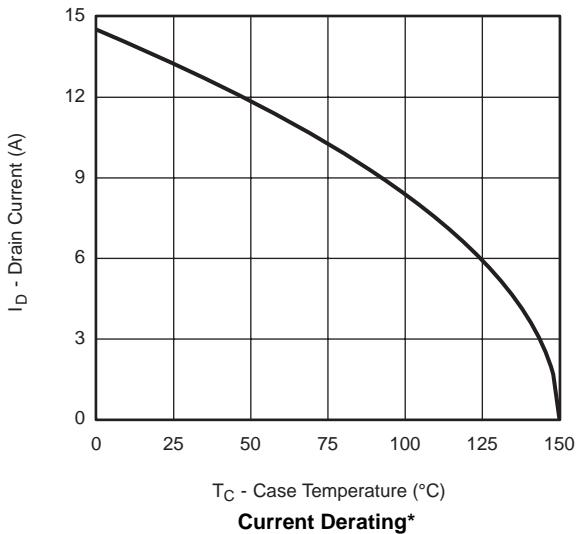
a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

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

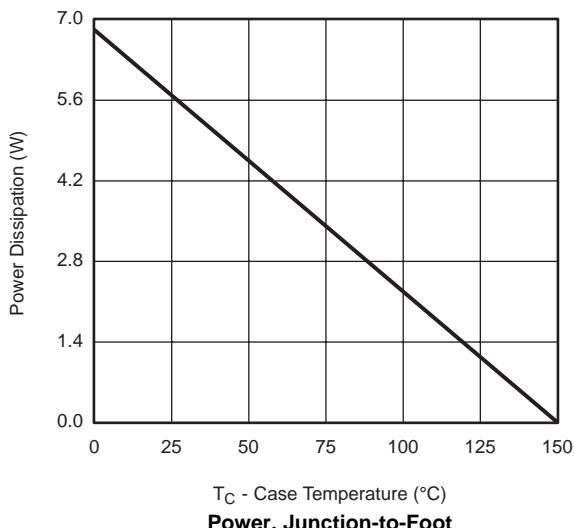
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


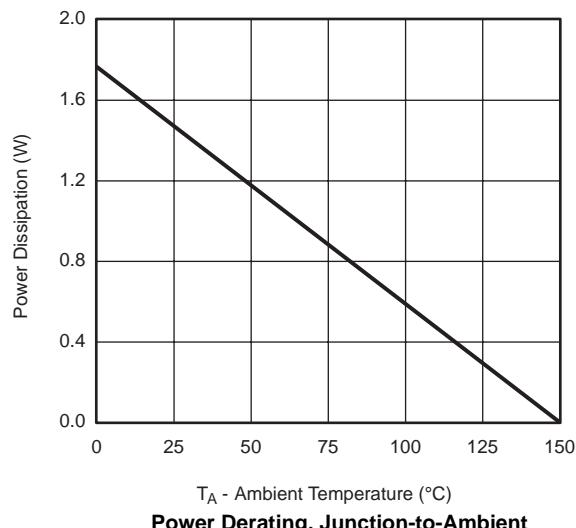
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted T_C - Case Temperature (°C)

Current Derating*

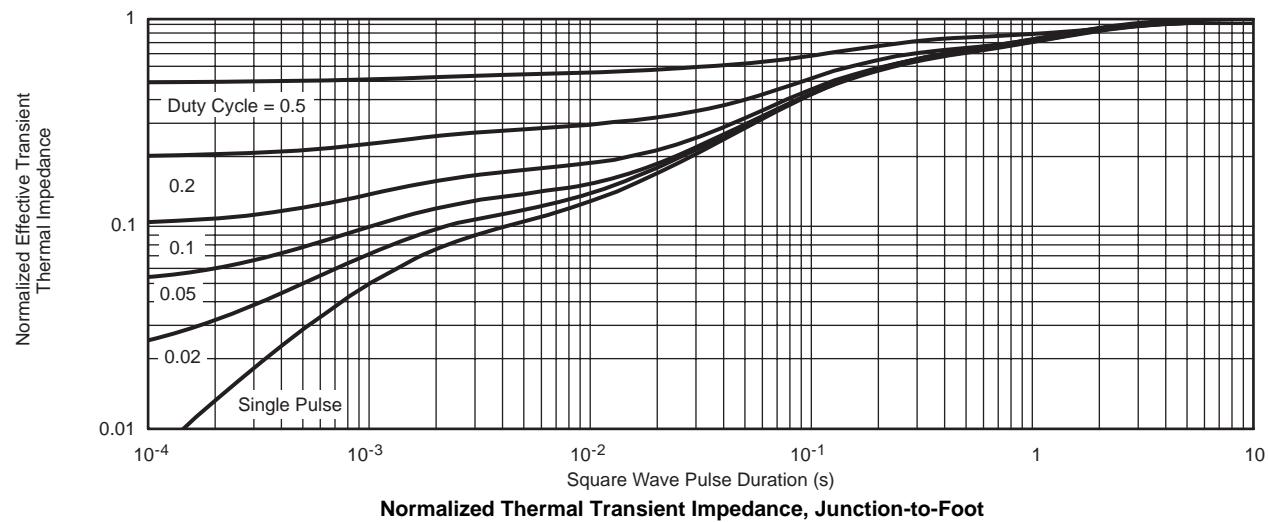
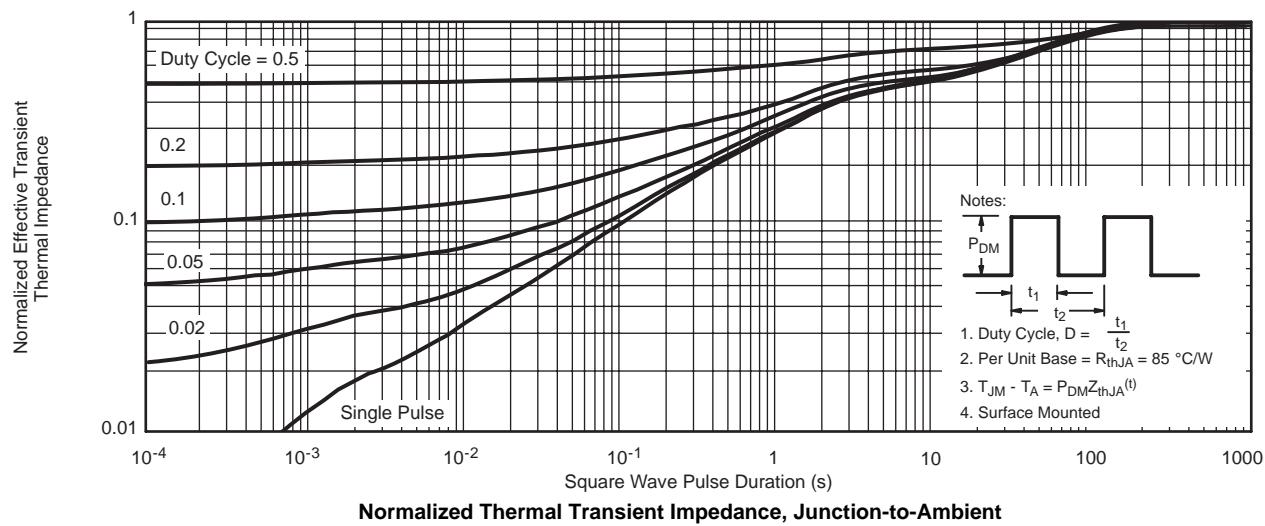
 T_C - Case Temperature (°C)

Power, Junction-to-Foot

 T_A - Ambient Temperature (°C)

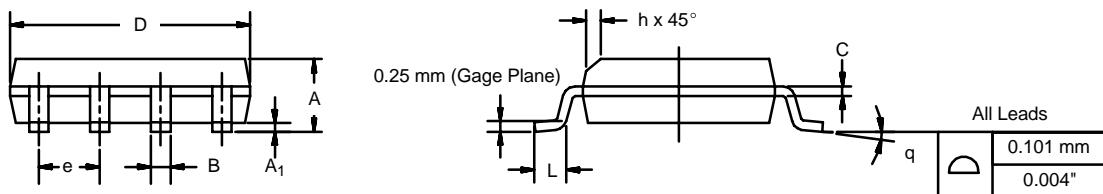
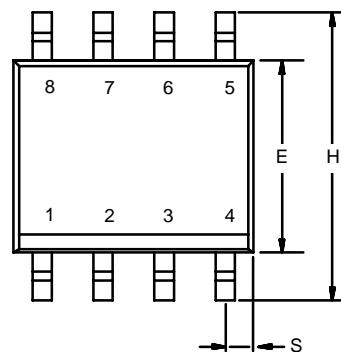
Power Derating, Junction-to-Ambient

* The power dissipation P_D is based on $T_{J(\text{max})} = 150$ °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


SOIC (NARROW): 8-LEAD

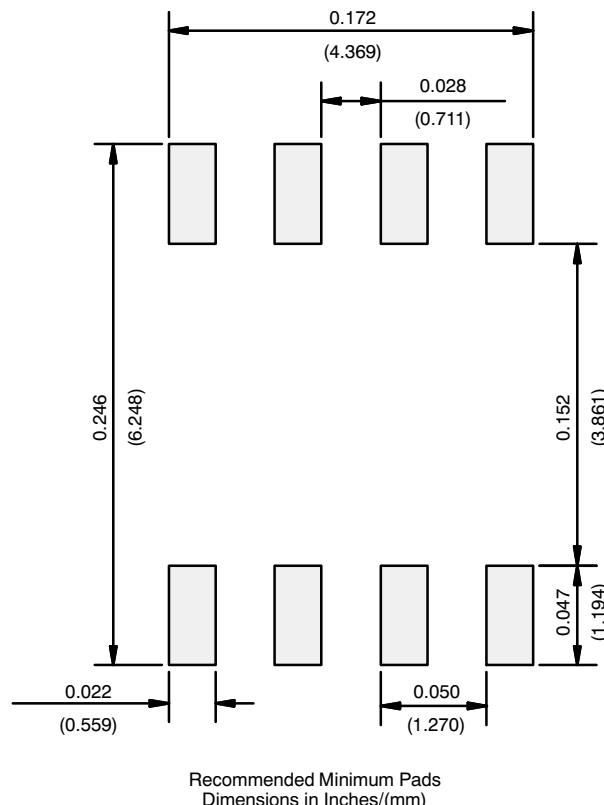
JEDEC Part Number: MS-012



DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

ECN: C-06527-Rev. I, 11-Sep-06
 DWG: 5498

RECOMMENDED MINIMUM PADS FOR SO-8



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