

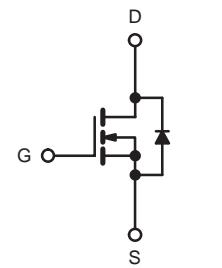
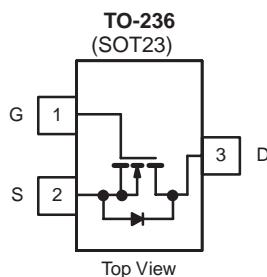
PMV55ENEAR-VB Datasheet

N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^a	Q _g (Typ.)
60	0.030 at V _{GS} = 10 V	5.5	2.3 nC
	0.033 at V _{GS} = 4.5 V	4.5	

FEATURES

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



APPLICATIONS

- Battery Switch
- DC/DC Converter

ABSOLUTE MAXIMUM RATINGS T _A = 25 °C, unless otherwise noted				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	60		V
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current (T _J = 150 °C)	T _C = 25 °C	5.5		A
	T _C = 70 °C	4.5		
	T _A = 25 °C	3.9 ^{b, c}		
	T _A = 70 °C	3.2 ^{b, c}		
Pulsed Drain Current	I _{DM}	20		A
Continuous Source-Drain Diode Current	T _C = 25 °C	1.39		
	T _A = 25 °C	0.91 ^{b, c}		
Avalanche Current	I _{AS}	6		mJ
Single-Pulse Avalanche Energy	E _{AS}	1.8		
Maximum Power Dissipation	T _C = 25 °C	1.66		W
	T _C = 70 °C	1.06		
	T _A = 25 °C	1.09 ^{b, c}		
	T _A = 70 °C	0.7 ^{b, c}		
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 ^{b, d}	R _{thJA}	90	115	°C/W
Maximum Junction-to-Foot (Drain)	R _{thJF}	60	75	

Notes:

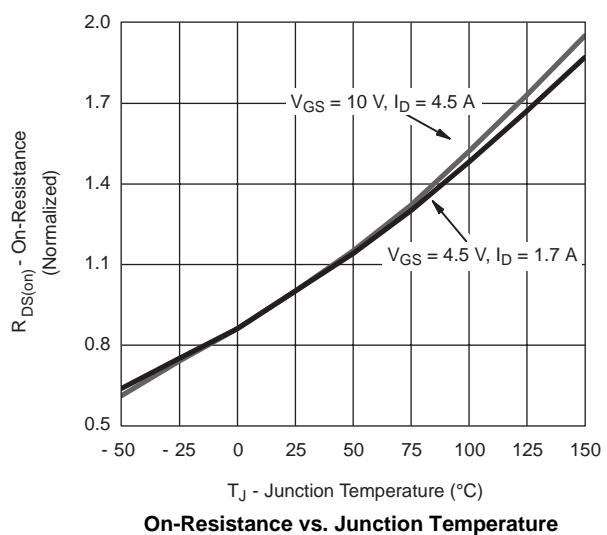
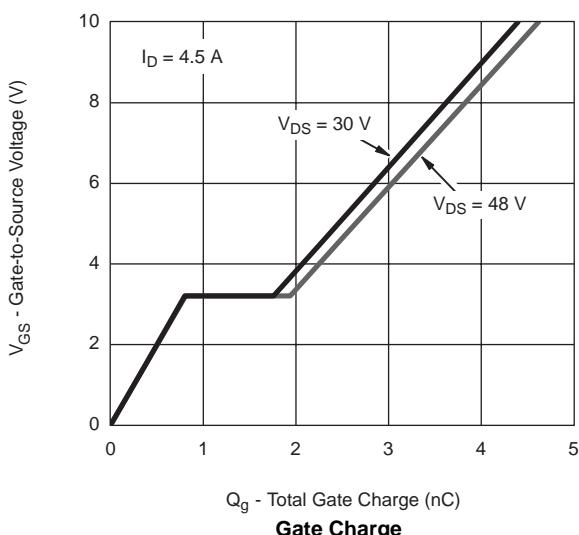
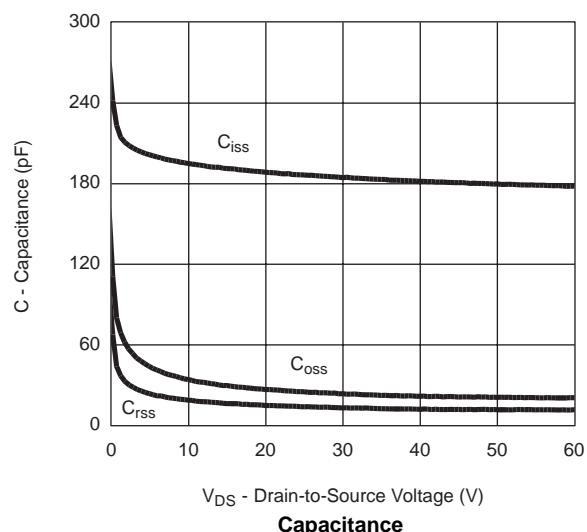
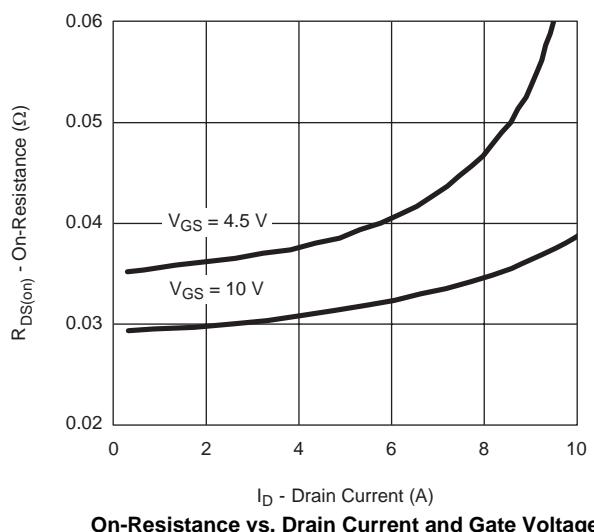
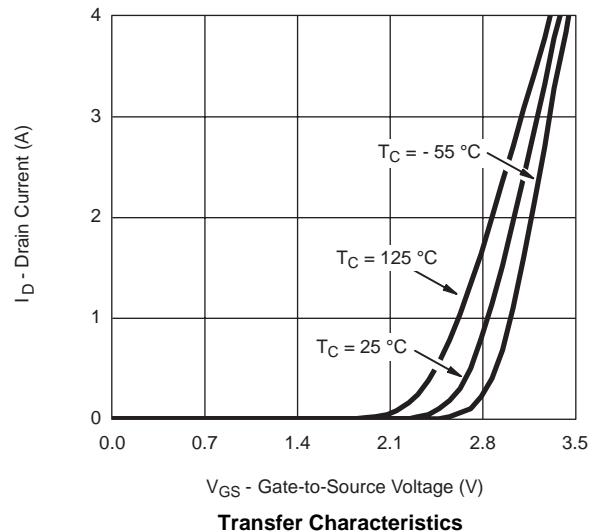
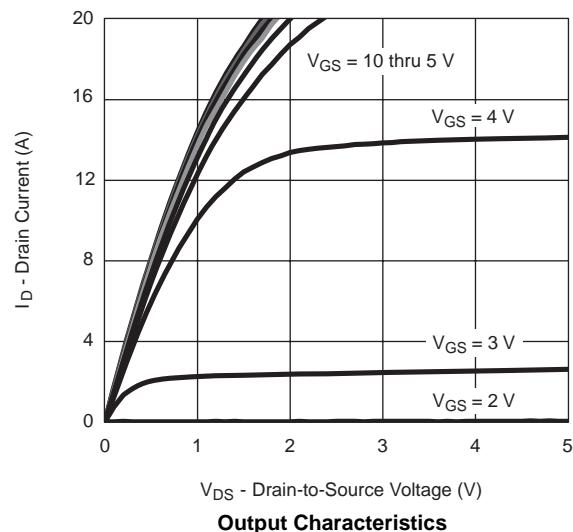
- Based on T_C = 25 °C.
- Surface Mounted on 1" x 1" FR4 board.
- t = 5 s.
- Maximum under Steady State conditions is 130 °C/W.

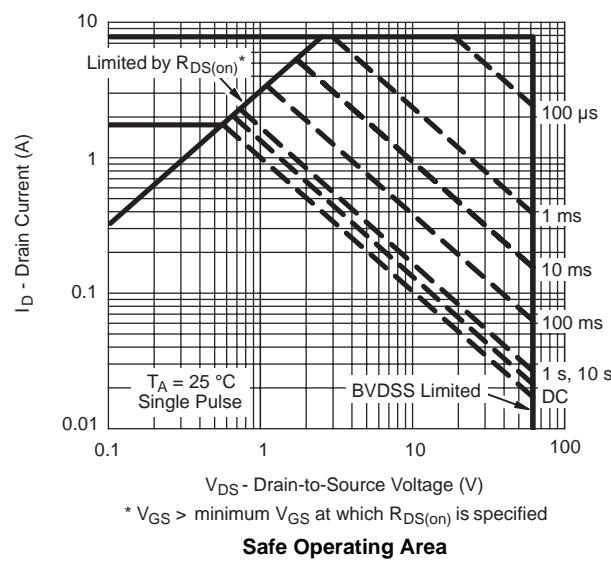
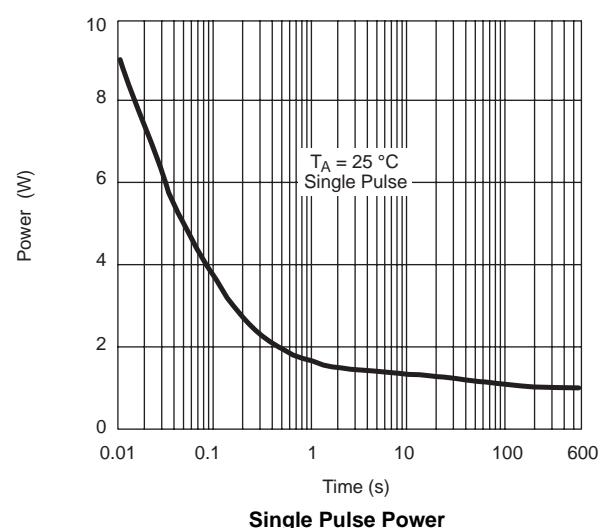
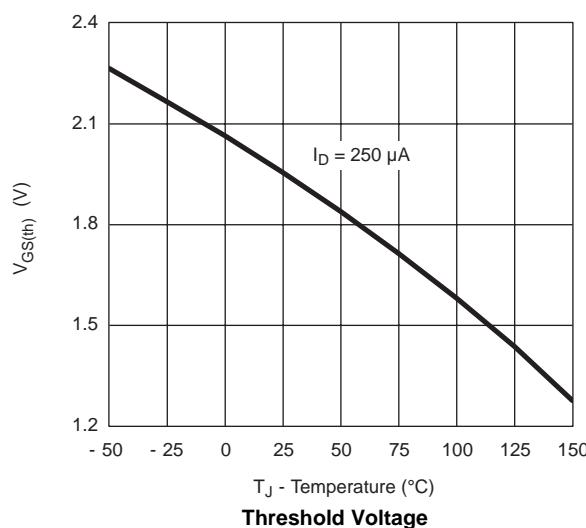
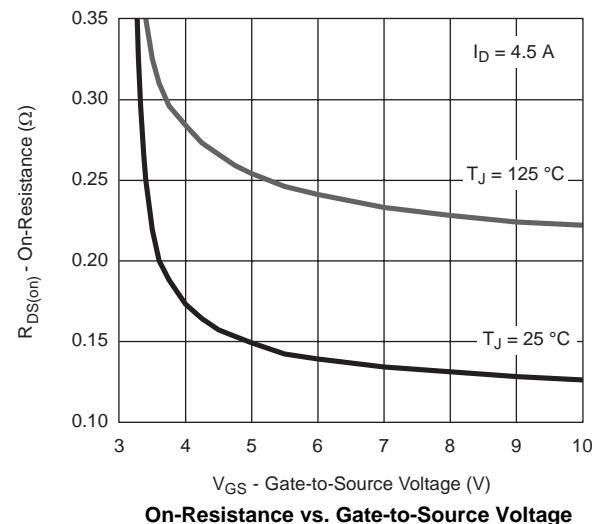
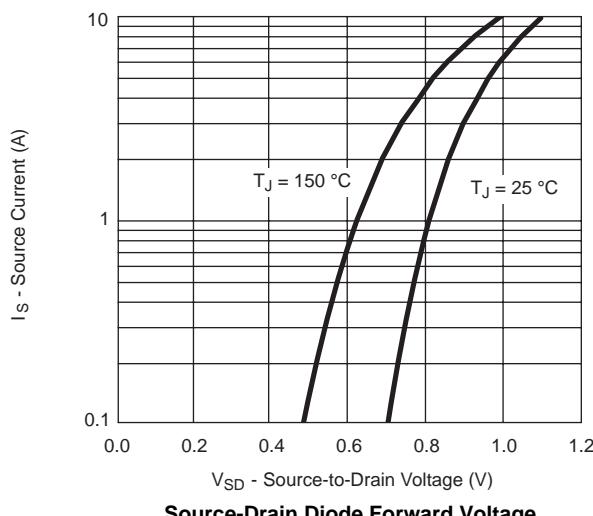
MOSFET SPECIFICATIONS $T_J = 25^\circ\text{C}$, unless otherwise noted							
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V_{DS}	$V_{DS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	60			V	
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = 250 \mu\text{A}$		55		$\text{mV}/^\circ\text{C}$	
$V_{GS(\text{th})}$ Temperature Coefficient	$\Delta V_{GS(\text{th})}/T_J$			-5			
Gate-Source Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1		3	V	
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$			1	μA	
		$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			10		
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	8			A	
Drain-Source On-State Resistance ^a	$R_{DS(\text{on})}$	$V_{GS} = 10 \text{ V}, I_D = 1.9 \text{ A}$		0.030		Ω	
		$V_{GS} = 4.5 \text{ V}, I_D = 1.7 \text{ A}$		0.033			
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 1.9 \text{ A}$		5		S	
Dynamic^b							
Input Capacitance	C_{iss}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		190		pF	
Output Capacitance	C_{oss}			26			
Reverse Transfer Capacitance	C_{rss}			15			
Total Gate Charge	Q_g	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 1.9 \text{ A}$		4.5	6.8	nC	
Gate-Source Charge	Q_{gs}	$V_{DS} = 30 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 1.9 \text{ A}$		2.3	3.5		
Gate-Drain Charge	Q_{gd}			0.8			
Gate Resistance	R_g			1			
Turn-On Delay Time	$t_{d(\text{on})}$	$V_{DD} = 30 \text{ V}, R_L = 20 \Omega$ $I_D \geq 1.5 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 1 \Omega$		0.6	2.8	5.6	Ω
Rise Time	t_r			4	6	ns	
Turn-Off Delay Time	$t_{d(\text{off})}$			10	15		
Fall Time	t_f			10	15		
Turn-On Delay Time	$t_{d(\text{on})}$	$V_{DD} = 30 \text{ V}, R_L = 20 \Omega$ $I_D = 1.5 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_G = 1 \Omega$		7	10.5	ns	
Rise Time	t_r			15	23		
Turn-Off Delay Time	$t_{d(\text{off})}$			16	24		
Fall Time	t_f			11	17		
				11	17		
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I_S	$T_C = 25^\circ\text{C}$			2.39	A	
Pulse Diode Forward Current ^a	I_{SM}				8		
Body Diode Voltage	V_{SD}	$I_S = 1.5 \text{ A}$		0.8	1.2	V	
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 1.5 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}, T_J = 25^\circ\text{C}$		15	23	ns	
Body Diode Reverse Recovery Charge	Q_{rr}			10	15	nC	
Reverse Recovery Fall Time	t_a			12		ns	
Reverse Recovery Rise Time	t_b			3			

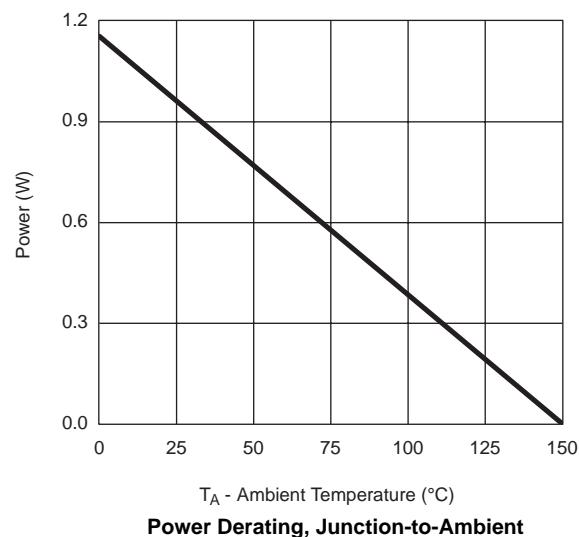
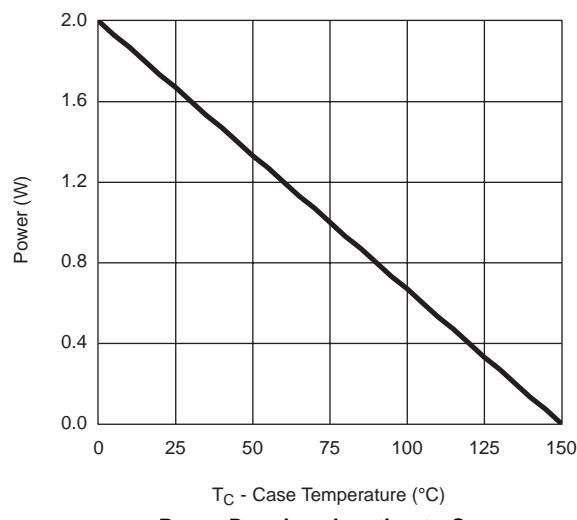
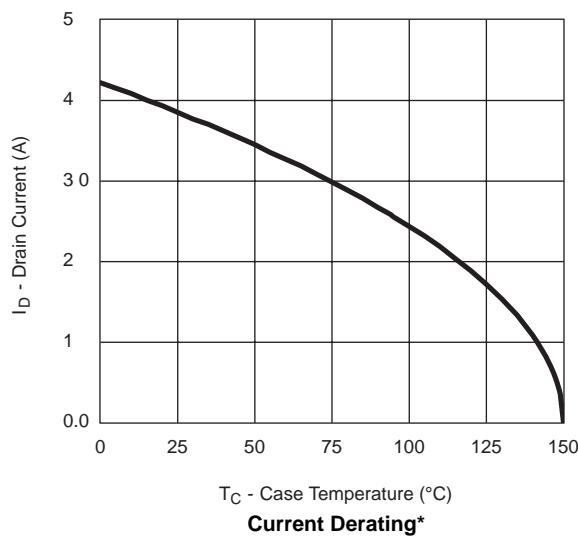
Notes:

- a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

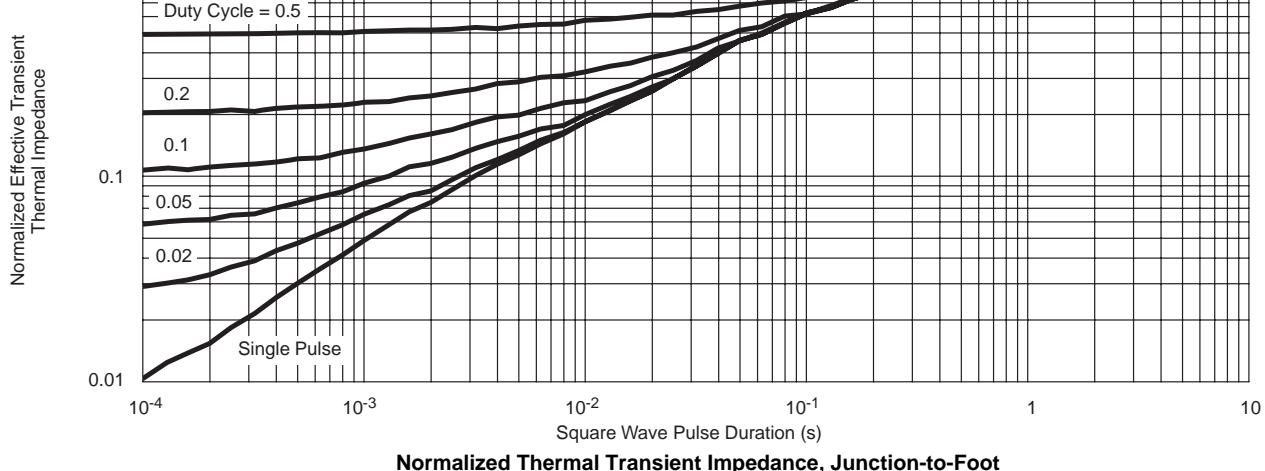
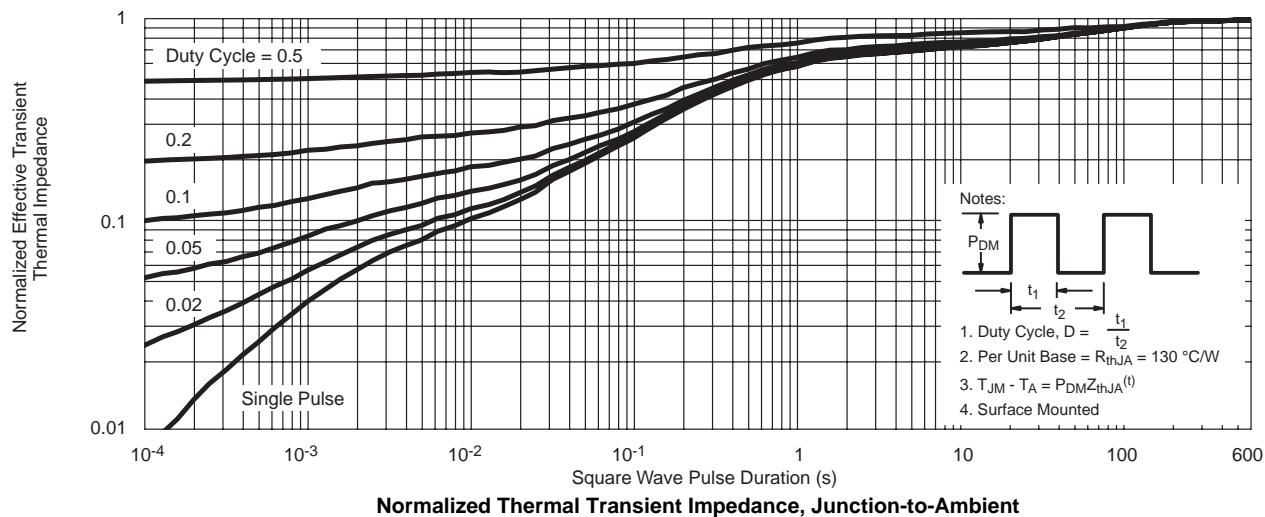
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


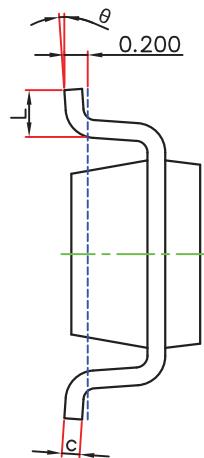
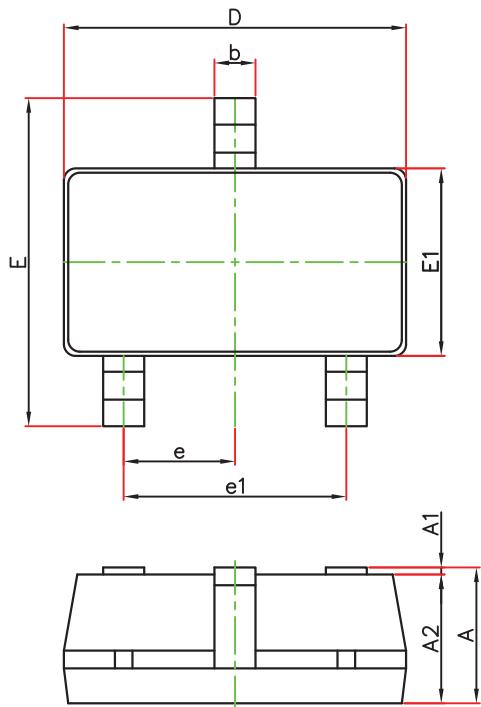
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* The power dissipation P_D is based on $T_{J(\max.)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current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

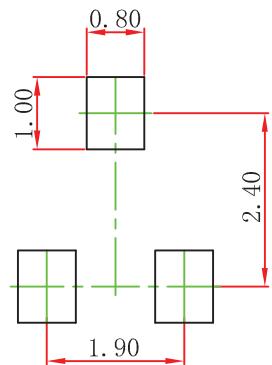
THERMAL RATINGS (T_A = 25 °C, unless otherwise noted)


SOT-23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

RECOMMENDED MINIMUM PADS FOR SOT-23-3L



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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