

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRLML6246
▶ Overseas	Part Number	IRLML6246
▶ Equivalent	Part Number	IRLML6246

EV is the abbreviation of name EVVO

N-Channel MOSFET

Features

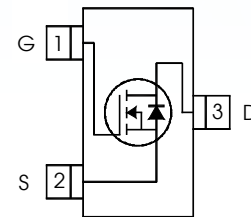
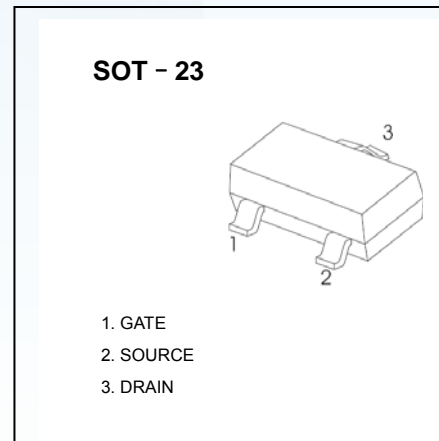
- $V_{DS} (V) = 20V$
- $R_{DS(ON)} < 46m\Omega$ ($V_{GS} = 4.5V$)
- $R_{DS(ON)} < 66m\Omega$ ($V_{GS} = 2.5V$)

Application(s)

- Load/ System Switch

Benefits

- Multi-vendor compatibility
- Environmentally friendly
- Increased Reliability



Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	4.1	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	3.3	
I_{DM}	Pulsed Drain Current	16	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation	1.3	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation	0.8	
	Linear Derating Factor	0.01	W/ $^\circ C$
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	$^\circ C$

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient ^③		100	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient ($t < 10s$) ^④		99	

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.
- ③ Surface mounted on 1 in square Cu board

N-Channel MOSFET
Electric Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	20			V	$V_G = 0V, I_D = 250\mu\text{A}$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		0.03		V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		30	46	m Ω	$V_G = 4.5V, I_D = 4.1A$ ②
			45	66		$V_G = 2.5V, I_D = 3.3A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	0.5	0.8	1.1	V	$V_D = V_G, I_D = 5\mu\text{A}$
I_{DSS}	Drain-to-Source Leakage Current			1.0	μA	$V_G = 16V, V_D = 0V$
				10		$V_G = 16V, V_D = 0V, T = 55^\circ\text{C}$
				150		$V_G = 16V, V_D = 0V, T = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage			100	nA	$V_D = 12V$
	Gate-to-Source Reverse Leakage			-100		$V_D = -12V$
R_G	Internal Gate Resistance		4.0		Ω	
g_{fs}	Forward Transconductance	10			S	$V_G = 10V, I_D = 4.1A$
Q_g	Total Gate Charge		3.5		nC	$I_D = 4.1A$
Q_{gs}	Gate-to-Source Charge		0.26			$V_G = 10V$
Q_{gd}	Gate-to-Drain ("Miller") Charge		1.7			$V_G = 4.5V$ ②
$t_{d(on)}$	Turn-On Delay Time		3.6		ns	$V_G = 10V$ ②
t_r	Rise Time		4.9			$I_D = 1.0A$
$t_{d(off)}$	Turn-Off Delay Time		11			$R_{\theta} = 6.8\Omega$
t_f	Fall Time		6.0			$V_G = 4.5V$
C_{iss}	Input Capacitance		290		pF	$V_G = 0V$
C_{oss}	Output Capacitance		64			$V_G = 16V$
C_{rss}	Reverse Transfer Capacitance		41			$f = 1.0\text{MHz}$

Source - Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)			1.3	A	MOSFET symbol integral reverse
I_{SM}	Pulsed Source Current (Body Diode) ①			16		
V_{SD}	Diode Forward Voltage			1.2	V	$T = 25^\circ\text{C}, I_D = 4.1A, V_G = 0V$ ②
t_{rr}	Reverse Recovery Time		8.6	13	ns	$T = 25^\circ\text{C}, V_G = 15V, I_D = 1.3A$
Q_{rr}	Reverse Recovery Charge		2.8	4.2		$di/dt = 100A/\mu\text{s}$ ②



N-Channel MOSFET

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

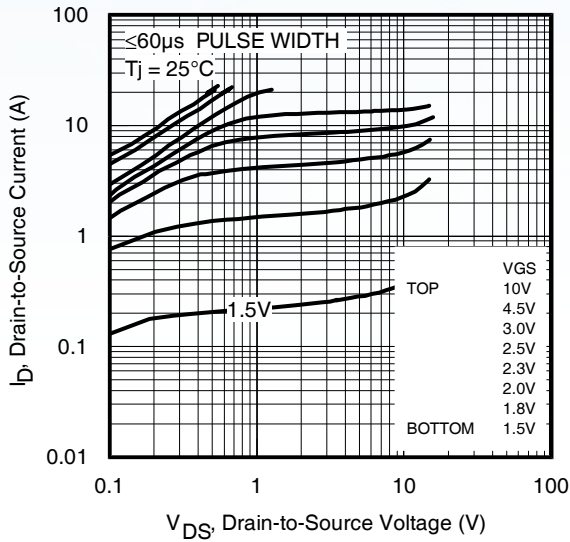


Fig 1. Typical Output Characteristics

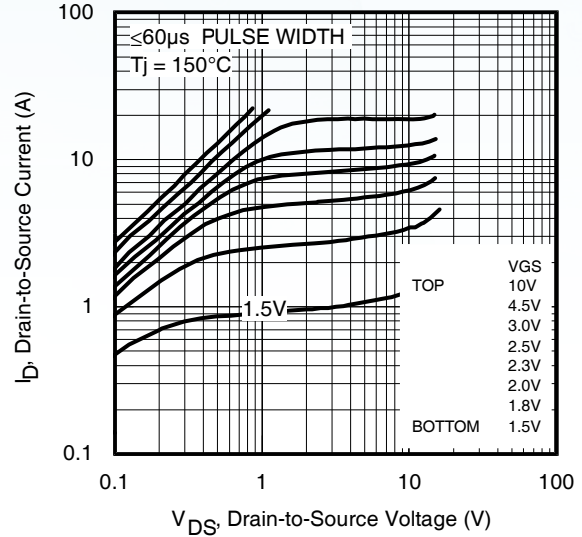


Fig 2. Typical Output Characteristics

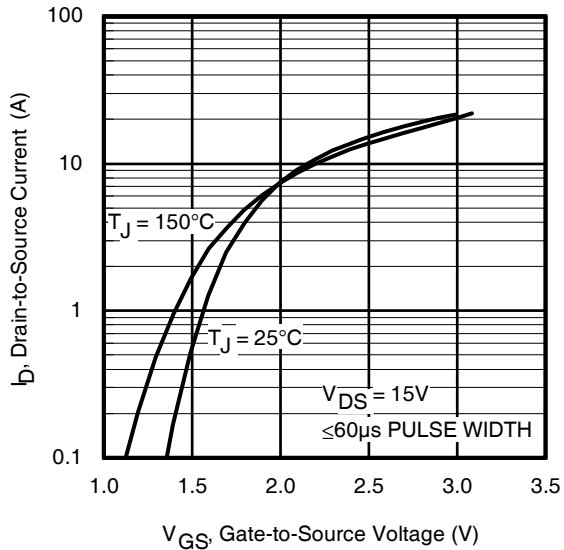


Fig 3. Typical Transfer Characteristics

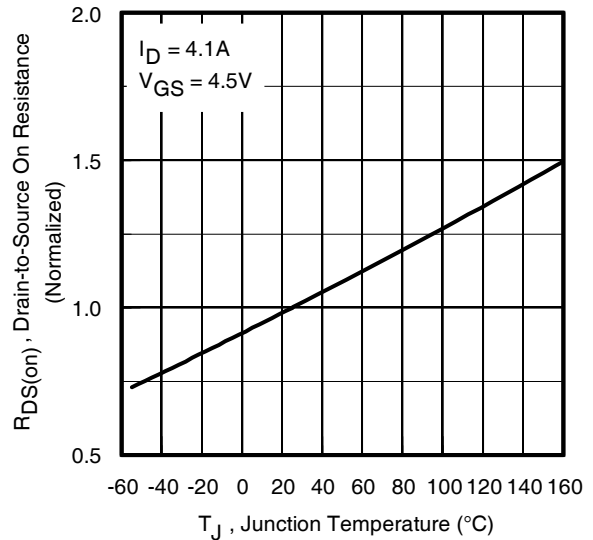


Fig 4. Normalized On-Resistance Vs. Temperature

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TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

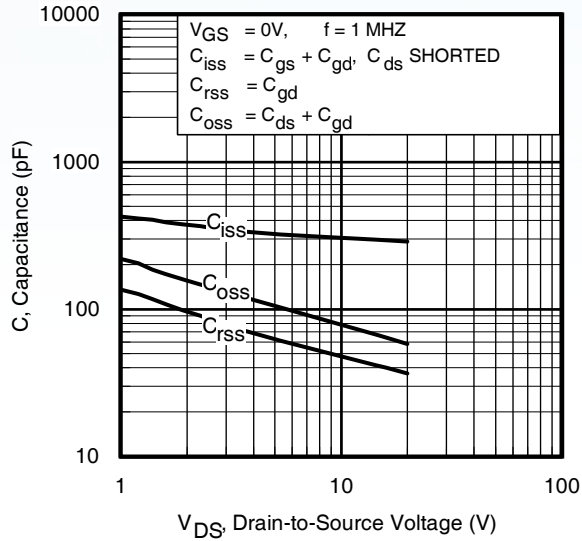


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

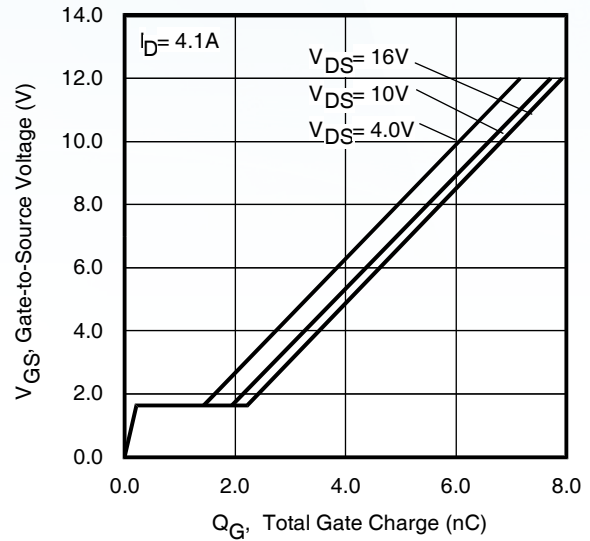


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

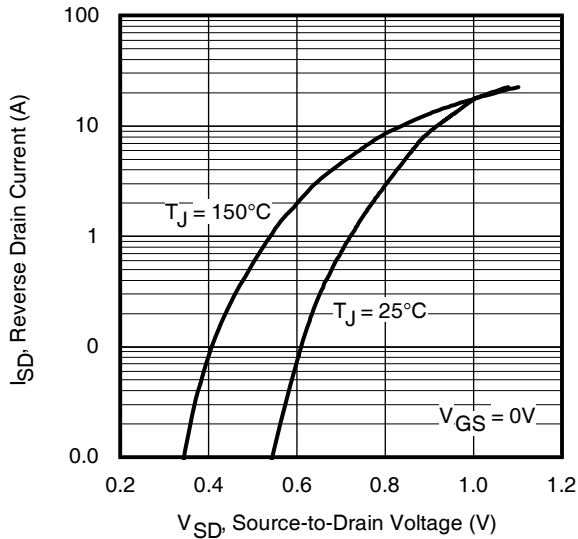


Fig 7. Typical Source-Drain Diode Forward Voltage

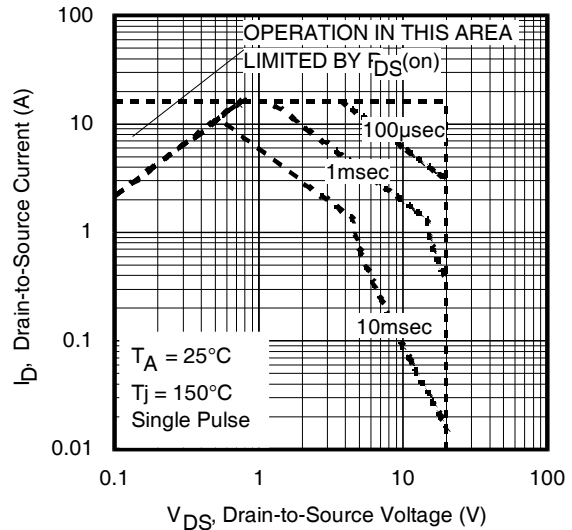


Fig 8. Maximum Safe Operating Area

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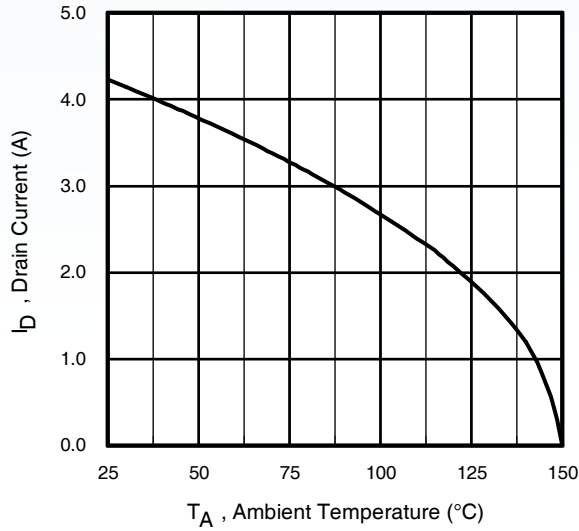


Fig 9. Maximum Drain Current Vs. Ambient Temperature

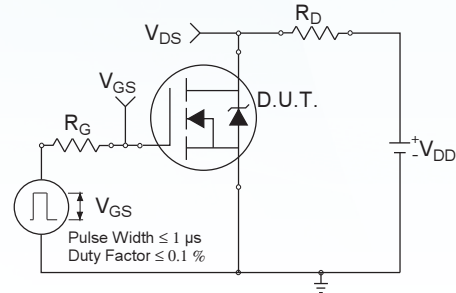


Fig 10a. Switching Time Test Circuit

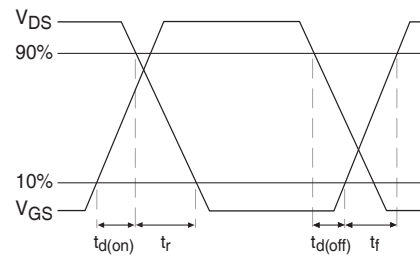


Fig 10b. Switching Time Waveforms

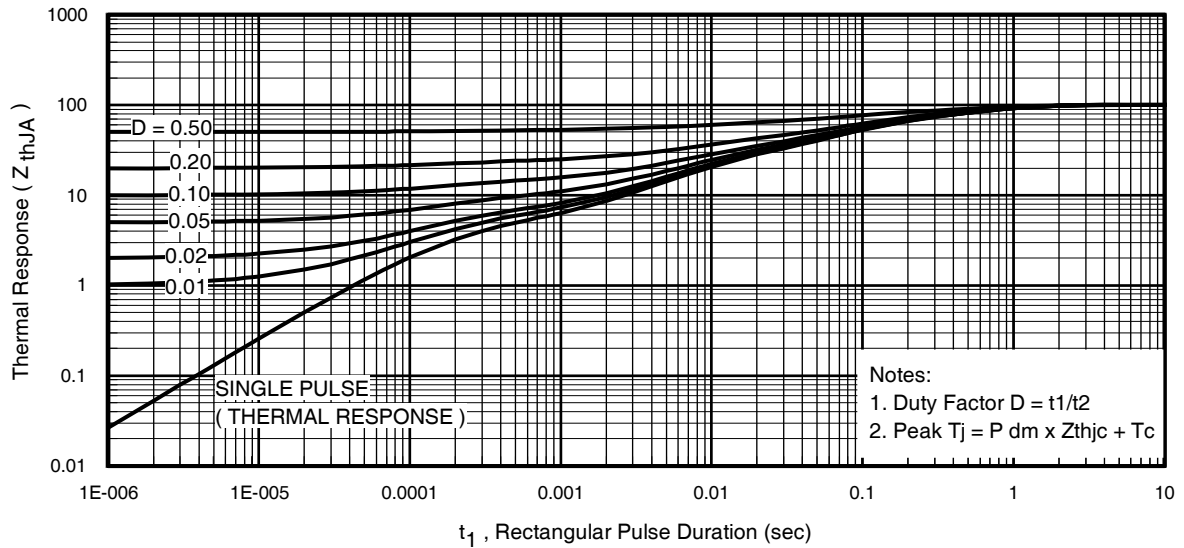


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

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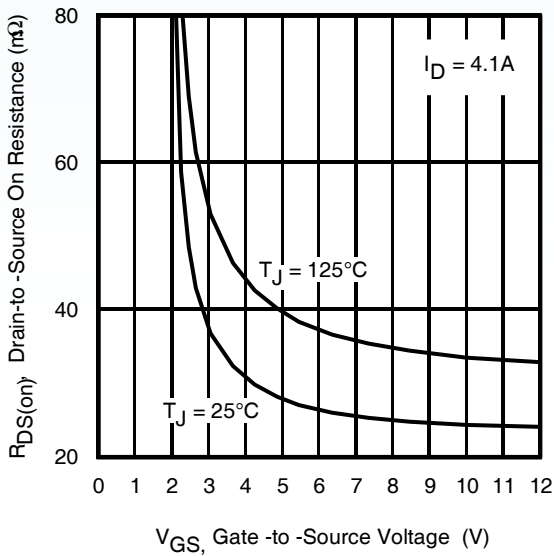


Fig 12. Typical On-Resistance Vs. Gate Voltage

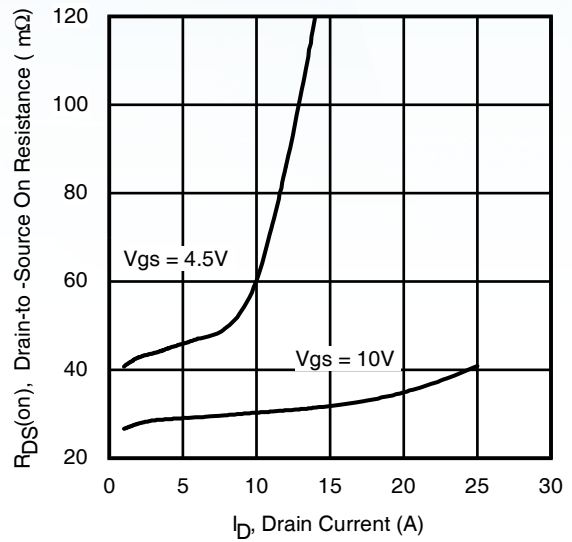


Fig 13. Typical On-Resistance Vs. Drain Current

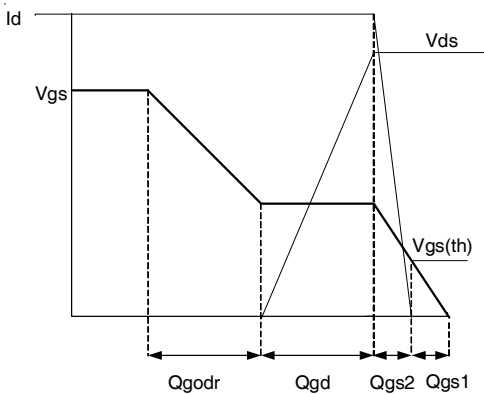


Fig 14a. Basic Gate Charge Waveform

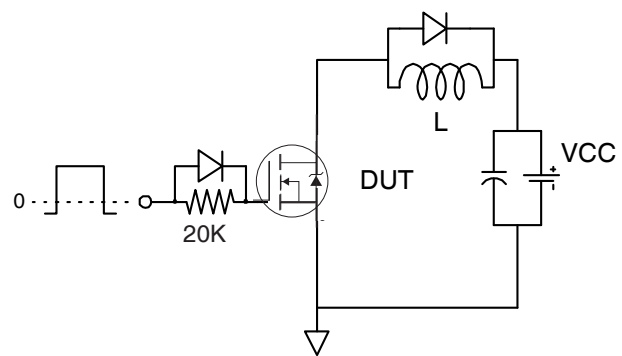


Fig 14b. Gate Charge Test Circuit

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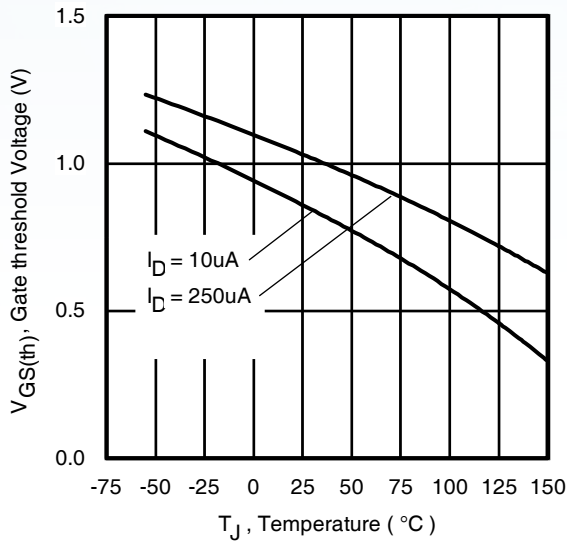


Fig 15. Typical Threshold Voltage Vs. Junction Temperature

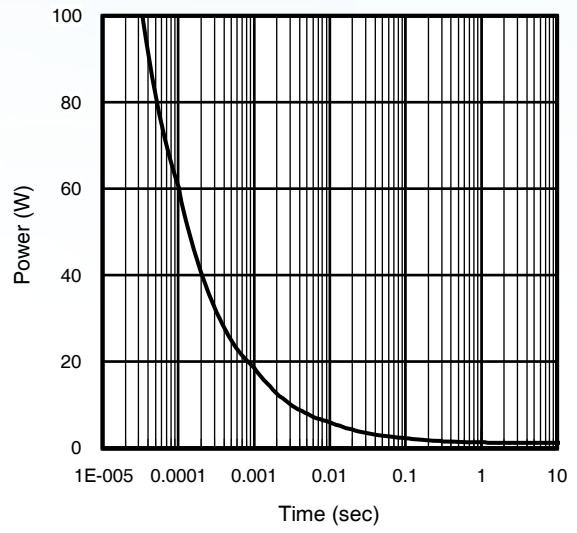
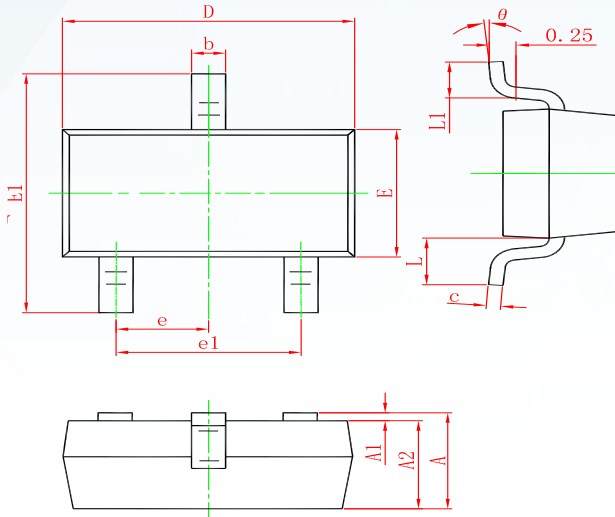


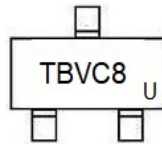
Fig 16. Typical Power Vs. Time

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
theta	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
IRLML6246	SOT-23	3000	Tape and reel

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