

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRLML2060
▶ Overseas	Part Number	IRLML2060
▶ Equivalent	Part Number	IRLML2060

EV is the abbreviation of name EVVO

Features

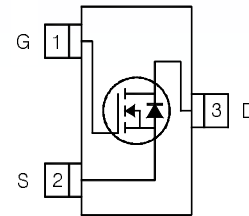
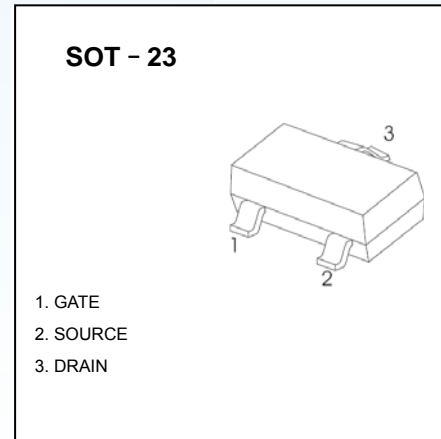
- $V_{DS} = 60V$
- $R_{DS(ON)} < 85m\ \Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 99m\ \Omega$ ($V_{GS} = 4.5V$)

Application(s)

- Load/ System Switch

Benefits

- Multi-vendor compatibility
- Easier manufacturing
- Environmentally friendly
- Increased reliability



Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	60	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	1.2	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	0.93	
I_{DM}	Pulsed Drain Current	4.8	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation	1.25	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation	0.80	
	Linear Derating Factor	0.01	W/ $^\circ C$
V_{GS}	Gate-to-Source Voltage	± 16	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	

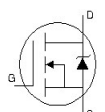
Notes:

- 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.

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	60			V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		0.06		V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 5.0\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		75	85	m Ω	$V_{GS} = 10V, I_D = 1.2A$ ②
			83	99		$V_{GS} = 4.5V, I_D = 0.96A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	1.0		2.5	V	$V_{DS} = V_{GS}, I_D = 25\mu A$
I_{DSS}	Drain-to-Source Leakage Current			20	μA	$V_{DS} = 60V, V_{GS} = 0V$
				150		$V_{DS} = 60V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage			100	nA	$V_{GS} = 16V$
	Gate-to-Source Reverse Leakage			-100		$V_{GS} = -16V$
R_G	Internal Gate Resistance		7.5		Ω	
g_{fs}	Forward Transconductance	1.6			S	$V_{DS} = 25V, I_D = 1.2A$
Q_g	Total Gate Charge		0.67		nC	$I_D = 1.2A$
Q_{gs}	Gate-to-Source Charge		0.18			$V_{DS} = 30V$
Q_{gd}	Gate-to-Drain ("Miller") Charge		0.40			$V_{GS} = 4.5V$ ②
$t_{d(on)}$	Turn-On Delay Time		4.9		ns	$V_{DD} = 30V$ ②
t_r	Rise Time		3.8			$I_D = 1.2A$
$t_{d(off)}$	Turn-Off Delay Time		3.7			$R_G = 6.8\Omega$
t_f	Fall Time		2.8			$V_{GS} = 4.5V$
C_{iss}	Input Capacitance		64		pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance		13			$V_{DS} = 25V$
C_{rss}	Reverse Transfer Capacitance		6.6			$f = 1.0\text{MHz}$

Source - Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)			1.2	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①			4.8		
V_{SD}	Diode Forward Voltage			1.2	V	$T_J = 25^\circ\text{C}, I_S = 1.2A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time		14	21	ns	$T_J = 25^\circ\text{C}, V_R = 30V, I_F = 1.3A$
Q_{rr}	Reverse Recovery Charge		8.3	12	nC	$di/dt = 100A/\mu s$ ②

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

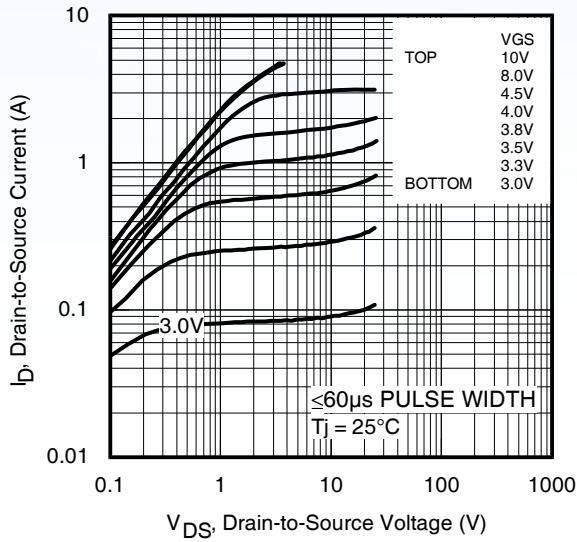


Fig 1. Typical Output Characteristics

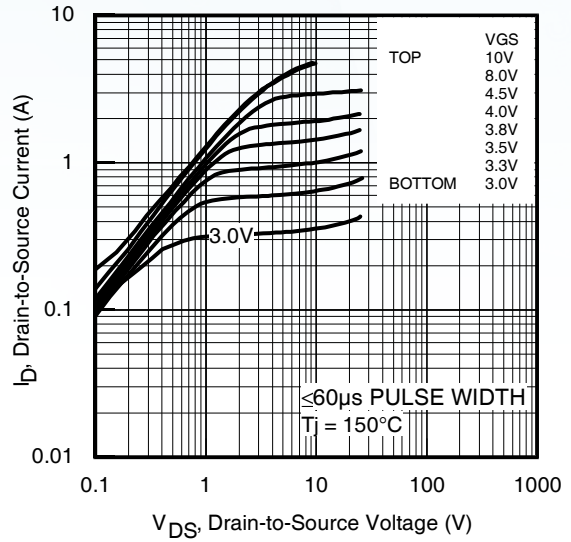


Fig 2. Typical Output Characteristics

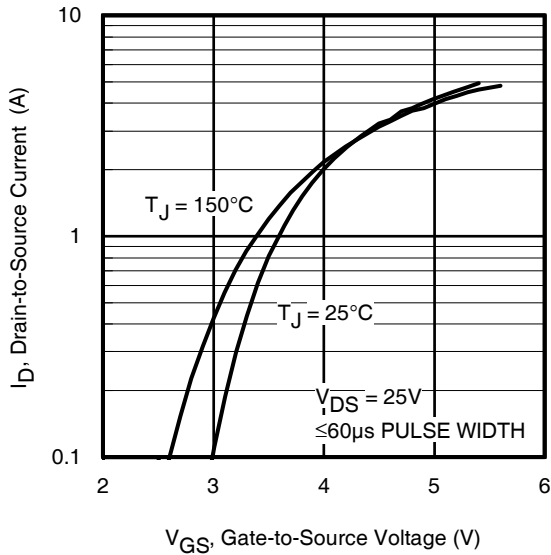


Fig 3. Typical Transfer Characteristics

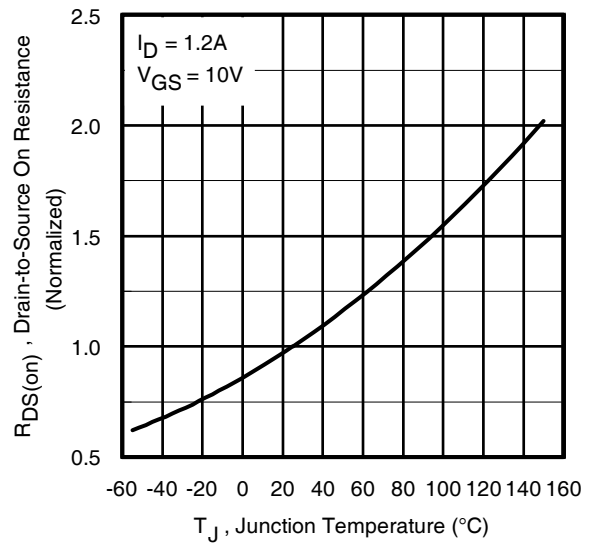


Fig 4. Normalized On-Resistance vs. Temperature

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

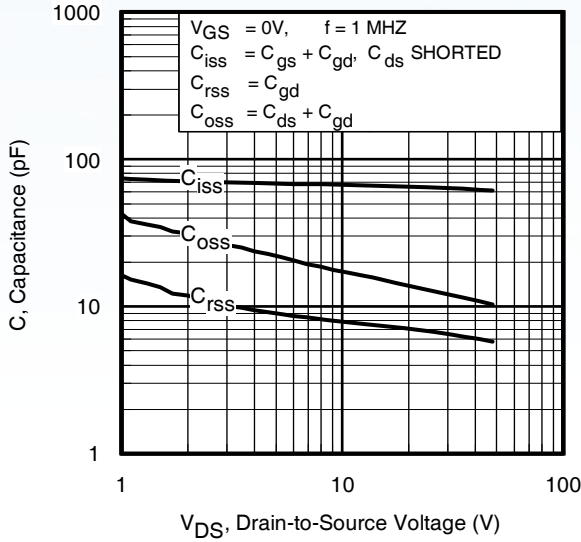


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

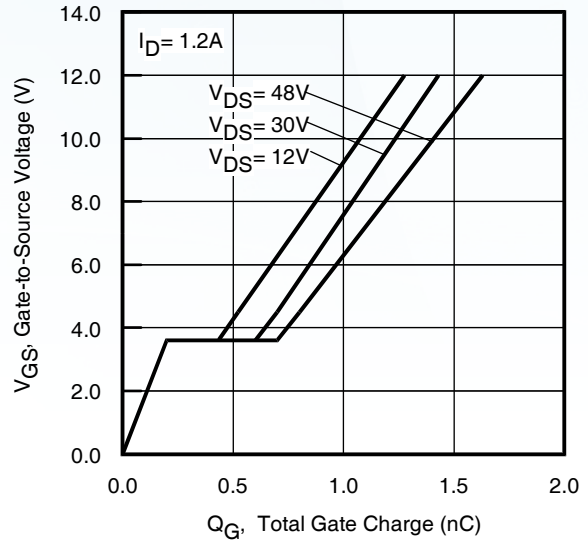


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

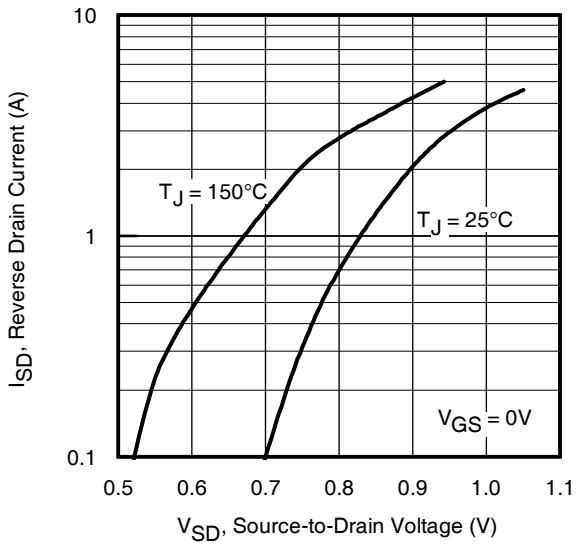


Fig 7. Typical Source-Drain Diode Forward Voltage

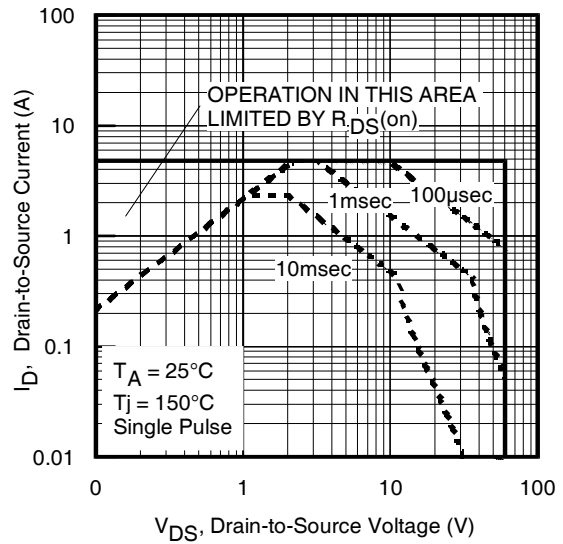


Fig 8. Maximum Safe Operating Area

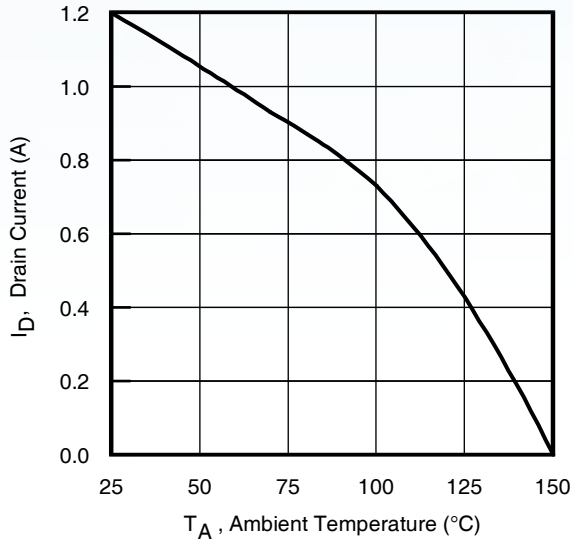


Fig 9. Maximum Drain Current vs. Ambient Temperature

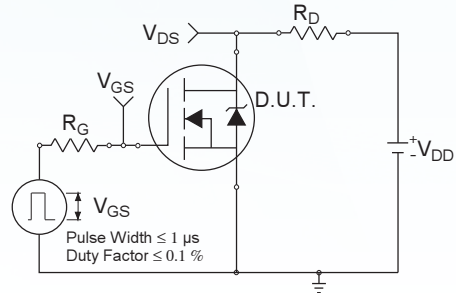


Fig 10a. Switching Time Test Circuit

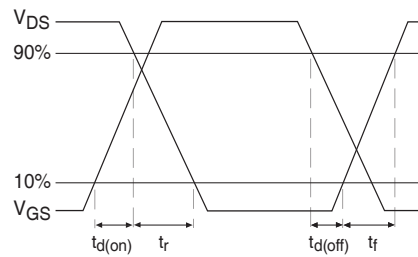


Fig 10b. Switching Time Waveforms

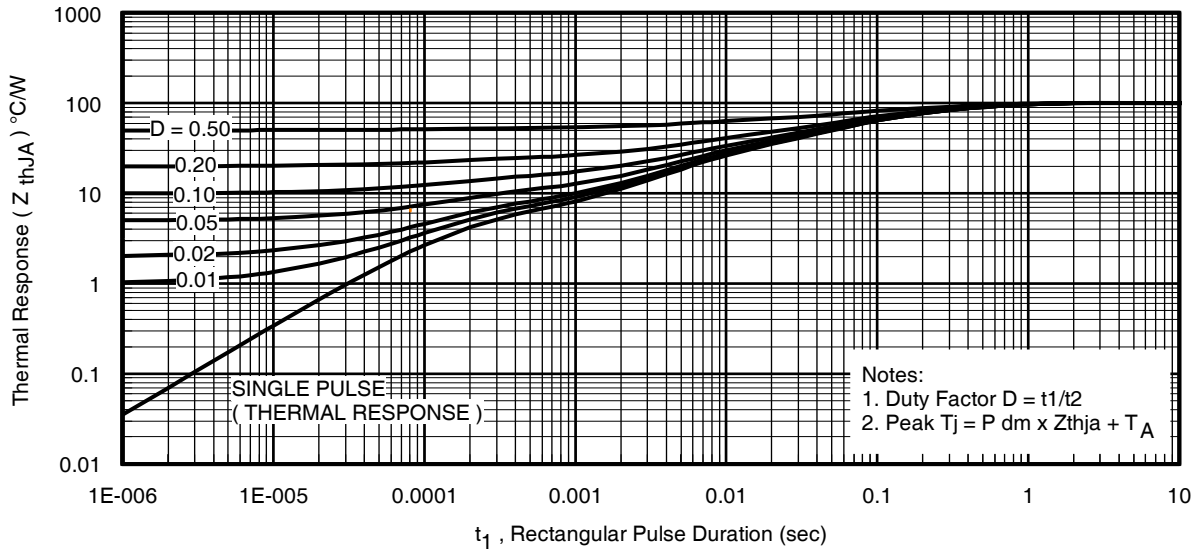


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

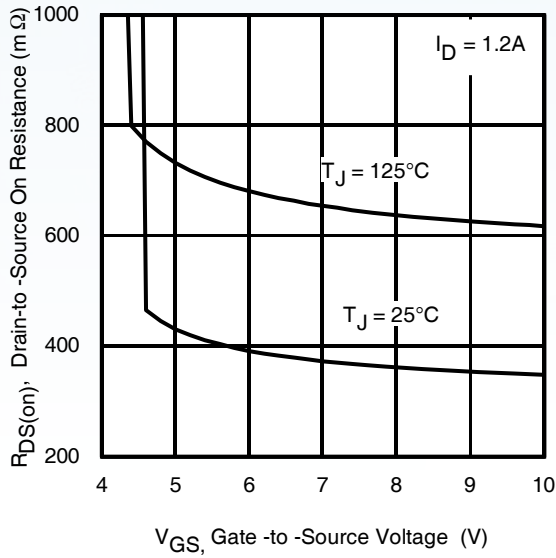


Fig 12. Typical On-Resistance vs. Gate Voltage

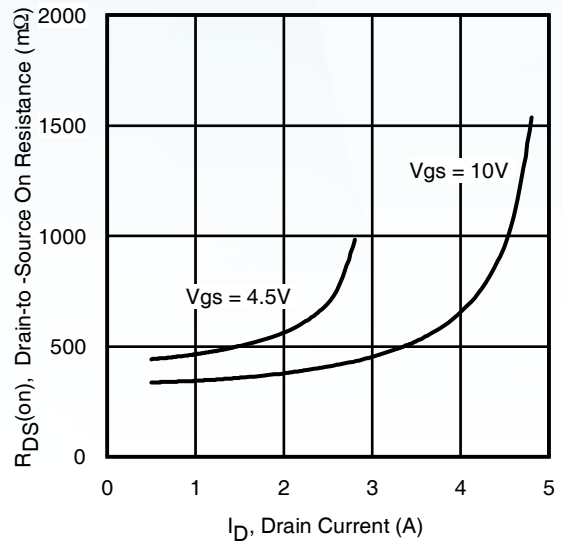


Fig 13. Typical On-Resistance vs. Drain Current

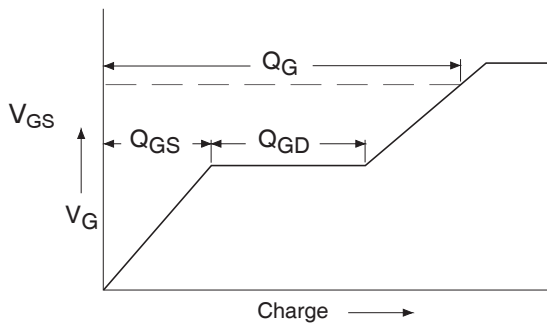


Fig 14a. Basic Gate Charge Waveform

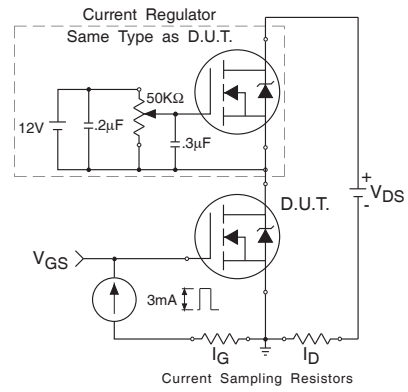


Fig 14b. Gate Charge Test Circuit

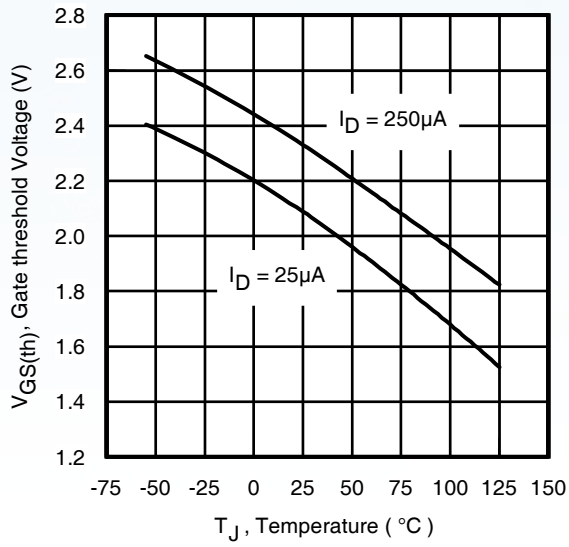


Fig 15. Typical Threshold Voltage vs. Junction Temperature

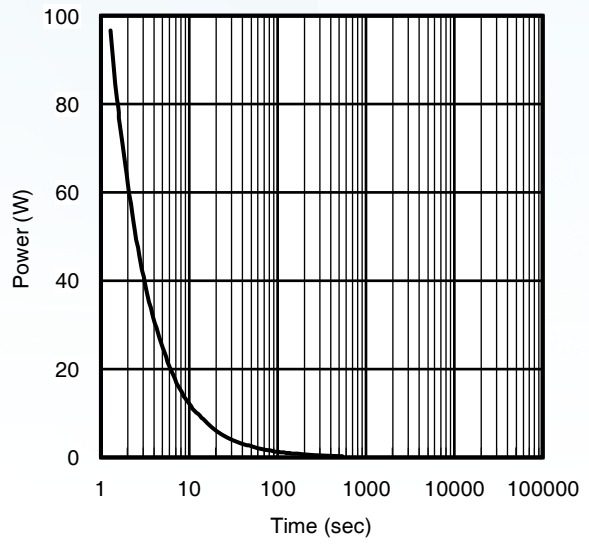
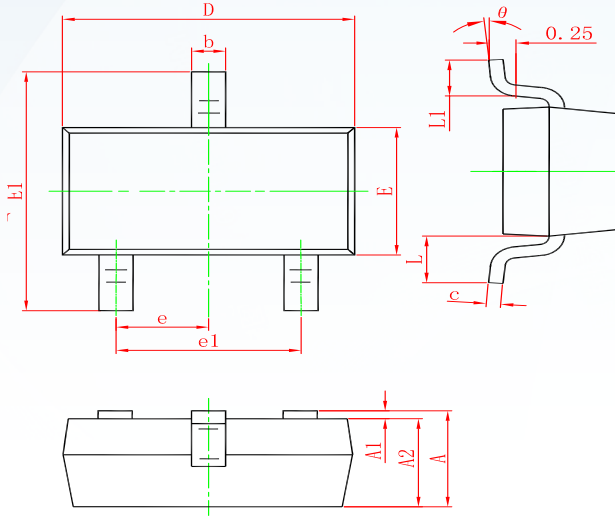


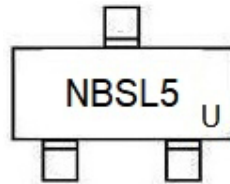
Fig 16. Typical Power vs. Time

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
IRLML2060	SOT-23	3000	Tape and reel

Disclaimer

EVVOSEMI ("EVVO") reserves the right to make corrections, enhancements, improvements, and other changes to its products and services at any time, and to discontinue any product or service without notice.

EVVO warrants the performance of its hardware products to the specifications applicable at the time of sale in accordance with its standard warranty. Testing and other quality control techniques are used as deemed necessary by EVVO to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

Customers should obtain and confirm the latest product information and specifications before final design, purchase, or use. EVVO makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does EVVO assume any liability for application assistance or customer product design. EVVO does not warrant or accept any liability for products that are purchased or used for any unintended or unauthorized application.

EVVO products are not authorized for use as critical components in life support devices or systems without the express written approval of EVVOSEMI.

The EVVO logo and EVVOSEMI are trademarks of EVVOSEMI or its subsidiaries in relevant jurisdictions. EVVO reserves the right to make changes without further notice to any products herein.