

# EVVOSEMI<sup>®</sup>

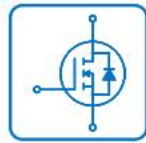
THINK CHANGE DO



ESD



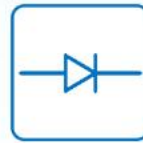
TVS



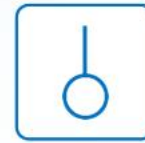
MOS



LDO



Diode



Sensor



DC-DC

## Product Specification

▶ Domestic	Part Number	IRLML0030
▶ Overseas	Part Number	IRLML0030
▶ Equivalent	Part Number	IRLML0030

EV is the abbreviation of name EVVO

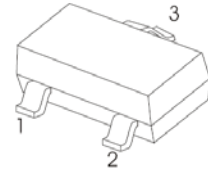
## Features

- $V_{DS} (V) = 30V$
- $R_{DS(ON)} < 27m\Omega$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 40m\Omega$  ( $V_{GS} = 4.5V$ )

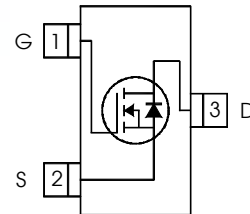
## Benefits

- Lower switching losses
- Multi-vendor compatibility
- Easier manufacturing
- Environmentally friendly
- Increased reliability

### SOT - 23



1. GATE
2. SOURCE
3. DRAIN



## Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
$V_{DS}$	Drain-Source Voltage	30	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	5.3	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	4.3	
$I_{DM}$	Pulsed Drain Current	21	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation	1.3	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation	0.8	
	Linear Derating Factor	0.01	W/°C
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to + 150	°C

## Thermal Resistance

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

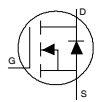
### Notes:

- 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	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.02	—	V/°C	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	33	40	mΩ	$V_{GS} = 4.5V, I_D = 4.2A$ ②
		—	22	27		$V_{GS} = 10V, I_D = 5.2A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	1.3	1.7	2.3	V	$V_{DS} = V_{GS}, I_D = 25\mu A$
$I_{DSS}$	Drain-to-Source Leakage Current	—	—	1	μA	$V_{DS} = 24V, V_{GS} = 0V$
		—	—	150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
$I_{GSS}$	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -20V$
$R_G$	Internal Gate Resistance	—	2.3	—	Ω	
$g_{fs}$	Forward Transconductance	9.5	—	—	S	$V_{DS} = 10V, I_D = 5.2A$
$Q_g$	Total Gate Charge	—	2.6	—	nC	$I_D = 5.2A$
$Q_{gs}$	Gate-to-Source Charge	—	0.8	—		$V_{DS} = 15V$
$Q_{gd}$	Gate-to-Drain ("Miller") Charge	—	1.1	—		$V_{GS} = 4.5V$ ②
$t_{d(on)}$	Turn-On Delay Time	—	5.2	—	ns	$V_{DD} = 15V$ ②
$t_r$	Rise Time	—	4.4	—		$I_D = 1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	7.4	—		$R_G = 6.8\Omega$
$t_f$	Fall Time	—	4.4	—		$V_{GS} = 4.5V$
$C_{iss}$	Input Capacitance	—	382	—	pF	$V_{GS} = 0V$
$C_{oss}$	Output Capacitance	—	84	—		$V_{DS} = 15V$
$C_{rss}$	Reverse Transfer Capacitance	—	39	—		$f = 1.0\text{MHz}$

**Source - Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	1.6	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode) ①	—	—	21		
$V_{SD}$	Diode Forward Voltage	—	—	1.0	V	$T_J = 25^\circ\text{C}, I_S = 1.6A, V_{GS} = 0V$ ②
$t_{rr}$	Reverse Recovery Time	—	11	17	ns	$T_J = 25^\circ\text{C}, V_R = 15V, I_F = 1.6A$
$Q_{rr}$	Reverse Recovery Charge	—	4.0	6.0	nC	$di/dt = 100A/\mu s$ ②

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

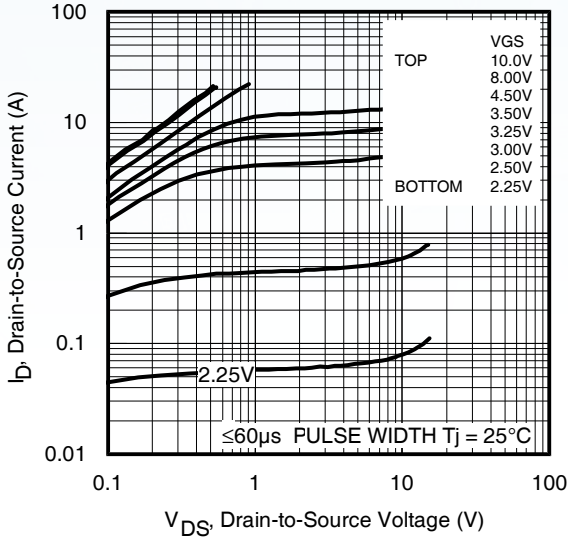


Fig 1. Typical Output Characteristics

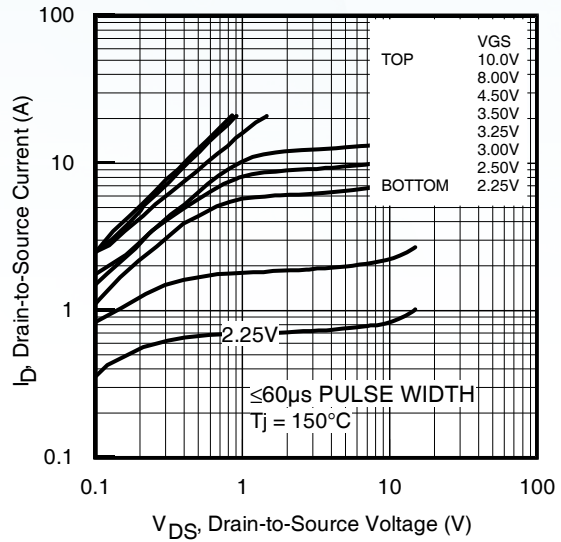


Fig 2. Typical Output Characteristics

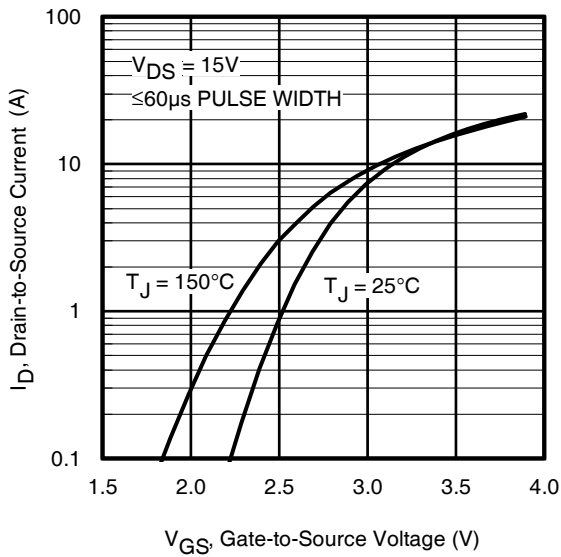


Fig 3. Typical Transfer Characteristics

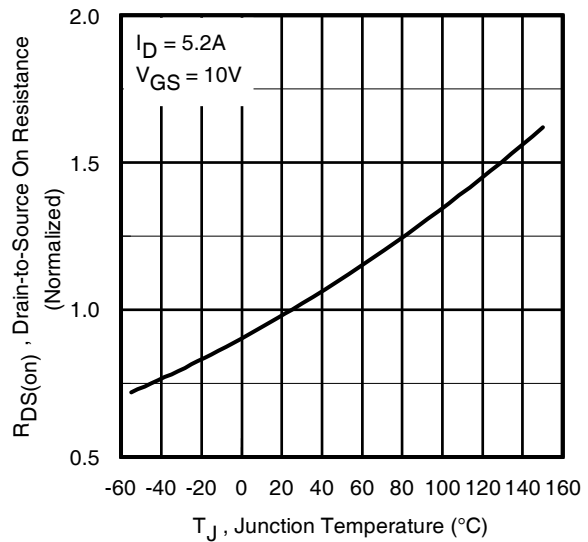
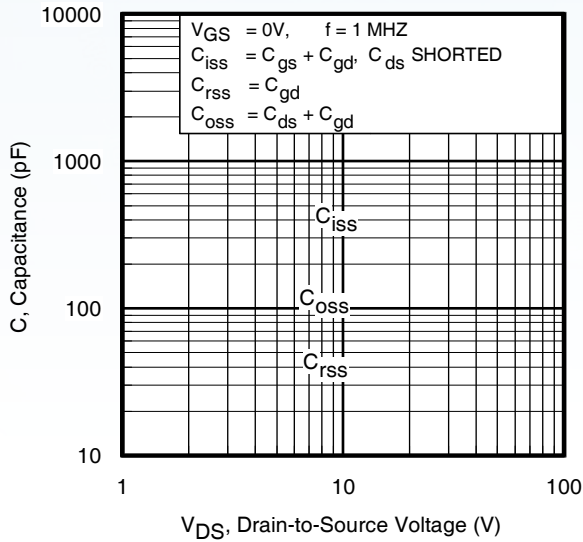
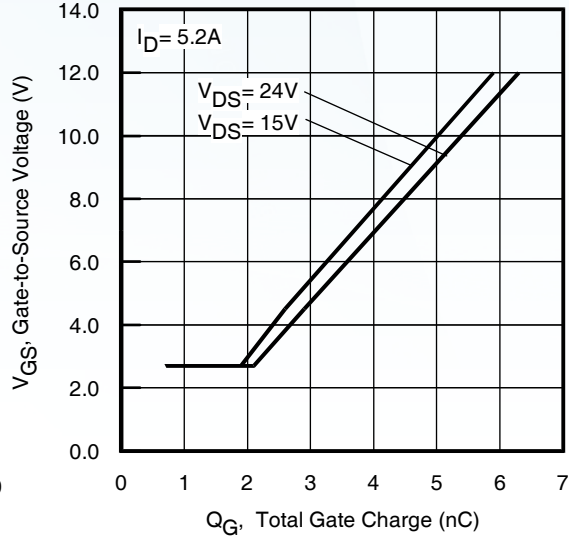


Fig 4. Normalized On-Resistance Vs. Temperature

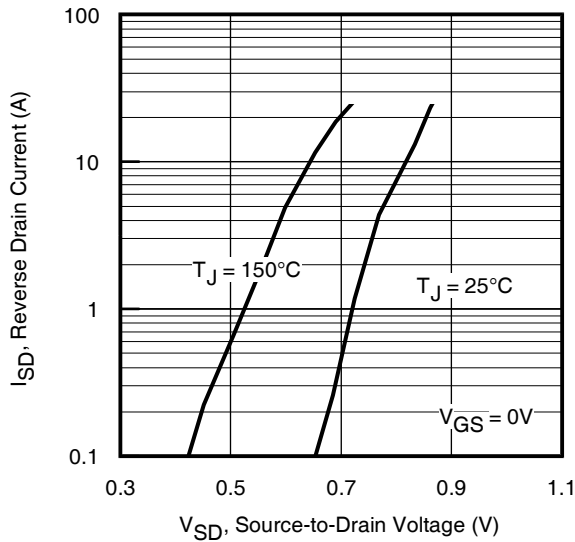
**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted



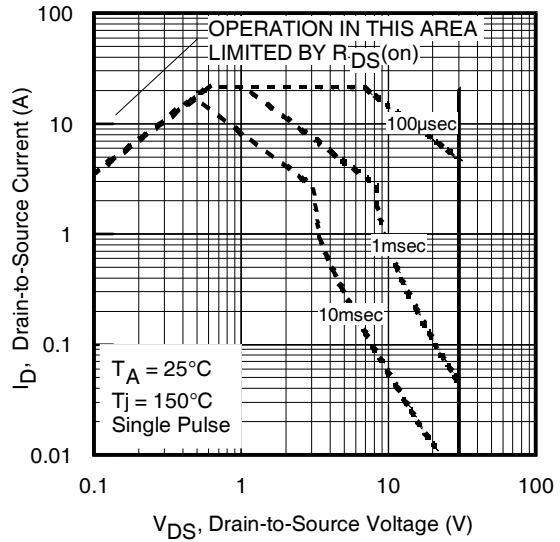
**Fig 5.** Typical Capacitance Vs. Drain-to-Source Voltage



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



**Fig 7.** Typical Source-Drain Diode Forward Voltage



**Fig 8.** Maximum Safe Operating Area

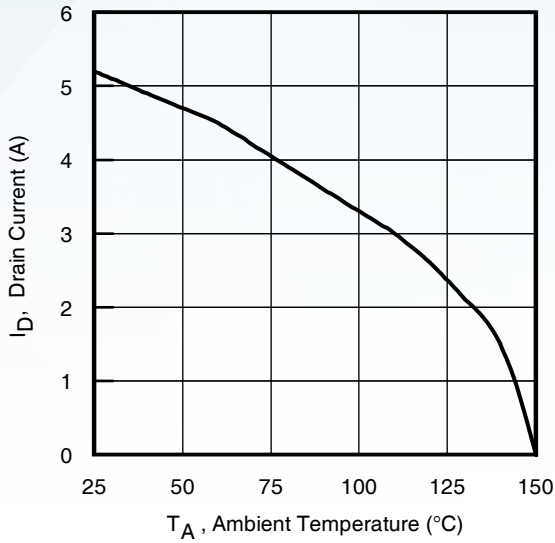


Fig 9. Maximum Drain Current Vs. Ambient Temperature

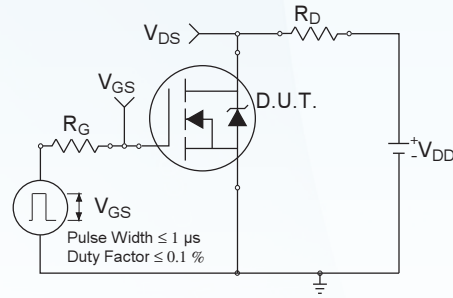


Fig 10a. Switching Time Test Circuit

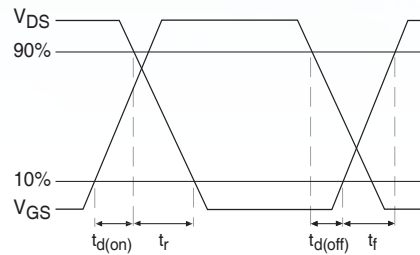


Fig 10b. Switching Time Waveforms

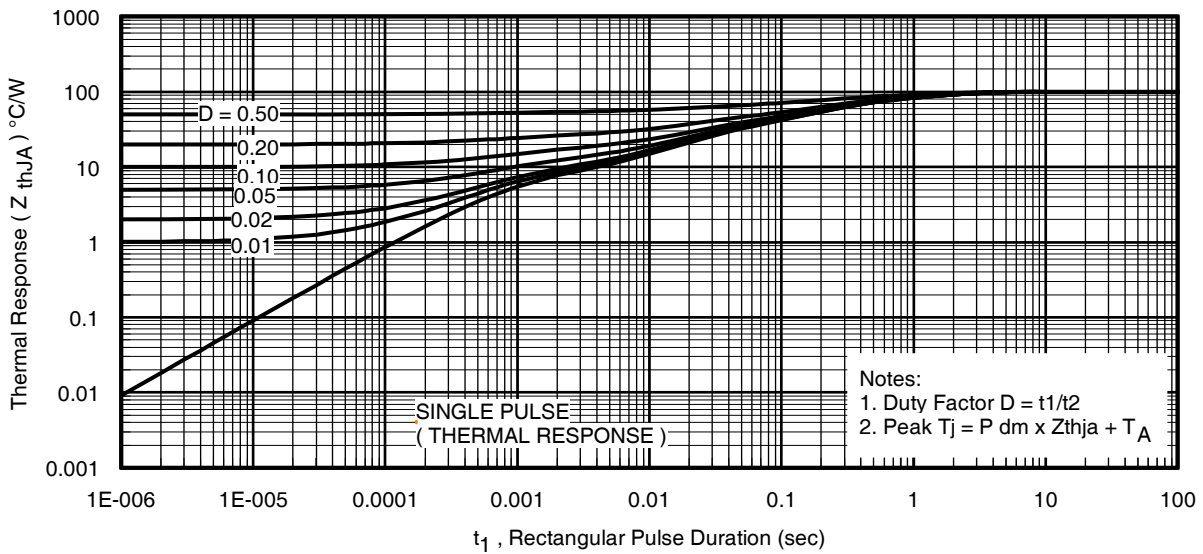


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

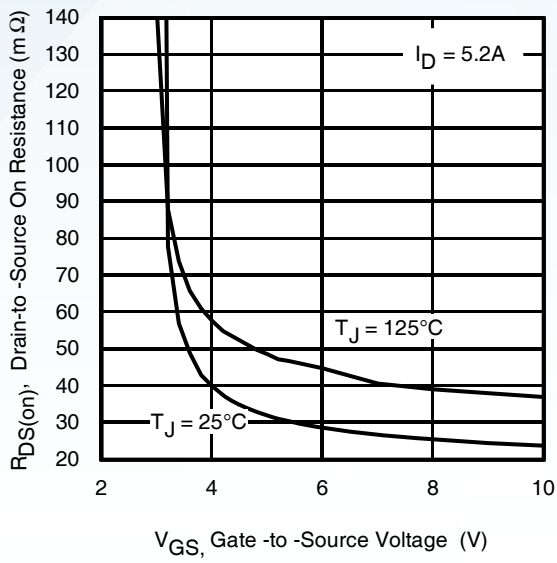


Fig 12. Typical On-Resistance Vs. Gate Voltage

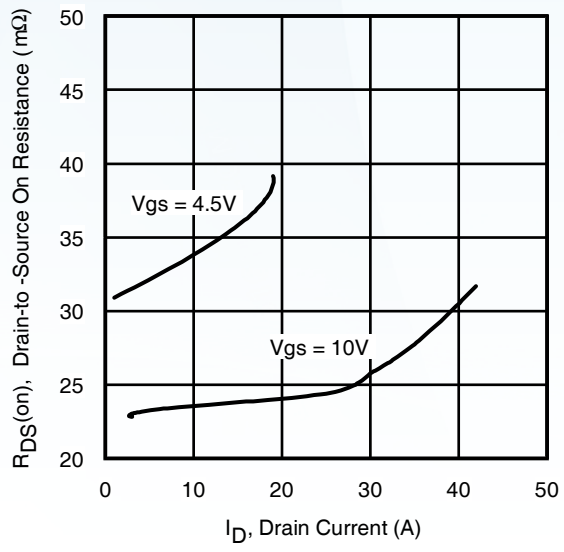


Fig 13. Typical On-Resistance Vs. Drain Current

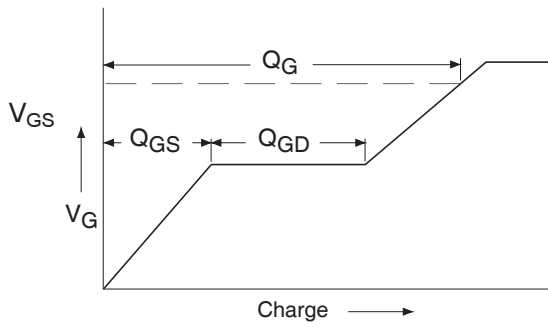


Fig 14a. Basic Gate Charge Waveform

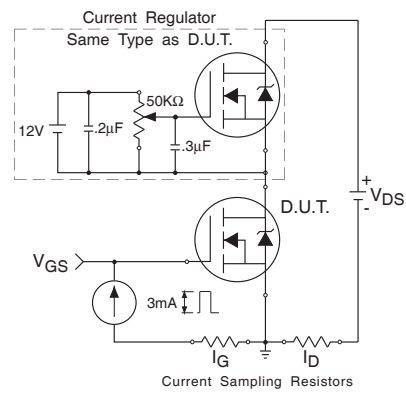


Fig 14b. Gate Charge Test Circuit

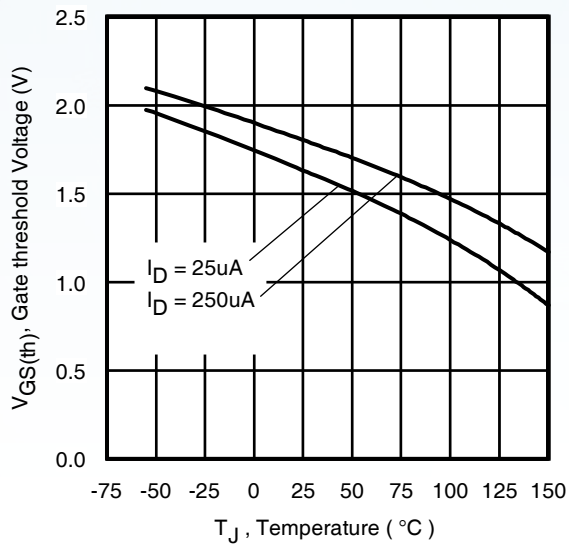


Fig 15. Typical Threshold Voltage Vs. Junction Temperature

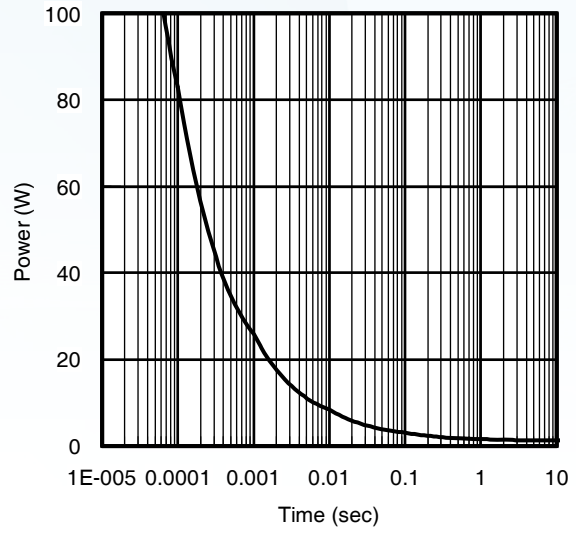
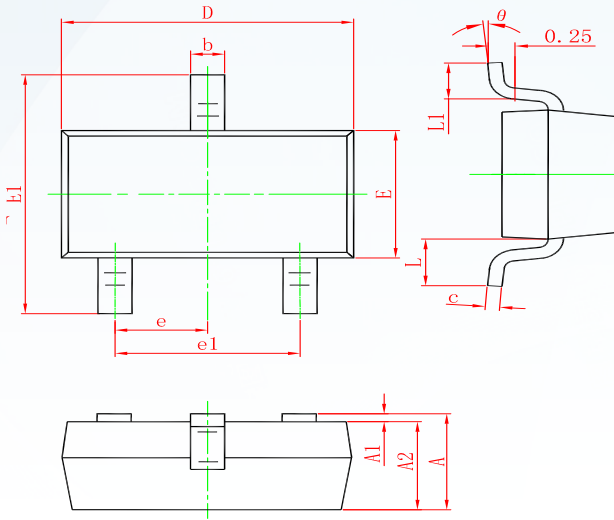


Fig 16. Typical Power Vs. Time

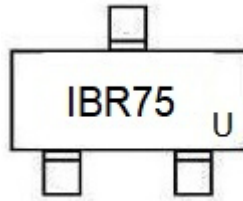


**SOT-23 PACKAGE OUTLINE DIMENSIONS**



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
IRLML0030	SOT-23	3000	Tape and reel

## Disclaimer

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