

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRLML6346
▶ Overseas	Part Number	IRLML6346
▶ Equivalent	Part Number	IRLML6346

EV is the abbreviation of name EVVO

N-Channel MOSFET

Features

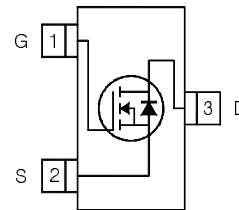
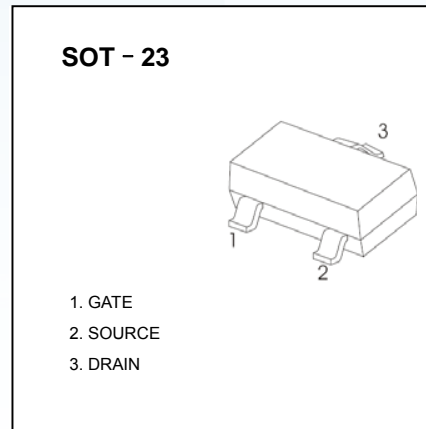
- $V_{DS} = 30V$
- $R_{DS(ON)} < 63m\Omega$ ($V_{GS} = 4.5V$)
- $R_{DS(ON)} < 80m\Omega$ ($V_{GS} = 2.5V$)

Application(s)

- Load/ System Switch

Benefits

- Multi-vendor compatibility
- Environmentally friendly
- Increased Reliability



Absolute Maximum Ratings

Symbol	Parameter		Units
V_{DS}	Drain-Source Voltage	30	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	3.4	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	2.7	
I_{DM}	Pulsed Drain Current	17	
$P_D @ T_A = 25^\circ C$	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	± 12	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.

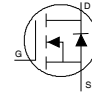
N-Channel MOSFET

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	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	—	46	63	mΩ	$V_{GS} = 4.5V, I_D = 3.4A$ ②
		—	59	80		$V_{GS} = 2.5V, I_D = 2.7A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	0.5	0.8	1.1	V	$V_{DS} = V_{GS}, I_D = 10\mu A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	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	$V_{GS} = 12V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -12V$
R_G	Internal Gate Resistance	—	3.9	—	Ω	
g_{fs}	Forward Transconductance	9.5	—	—	S	$V_{DS} = 10V, I_D = 3.4A$
Q_g	Total Gate Charge	—	2.9	—	nC	$I_D = 3.4A$
Q_{gs}	Gate-to-Source Charge	—	0.13	—		$V_{DS} = 15V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	1.1	—		$V_{GS} = 4.5V$ ②
$t_{d(on)}$	Turn-On Delay Time	—	3.3	—	ns	$V_{DD} = 15V$ ②
t_r	Rise Time	—	4.0	—		$I_D = 1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	12	—		$R_G = 6.8\Omega$
t_f	Fall Time	—	4.9	—		$V_{GS} = 4.5V$
C_{iss}	Input Capacitance	—	270	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	32	—		$V_{DS} = 24V$
C_{rss}	Reverse Transfer Capacitance	—	21	—		$f = 1.0\text{MHz}$

Source - Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	1.3	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	17		
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$T_J = 25^\circ\text{C}, I_S = 3.4A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	8.8	13	ns	$T_J = 25^\circ\text{C}, V_R = 24V, I_F = 1.3A$
Q_{rr}	Reverse Recovery Charge	—	2.7	4.1	nC	$di/dt = 100A/\mu s$ ②



N-Channel MOSFET

Typical Electrical Characteristics

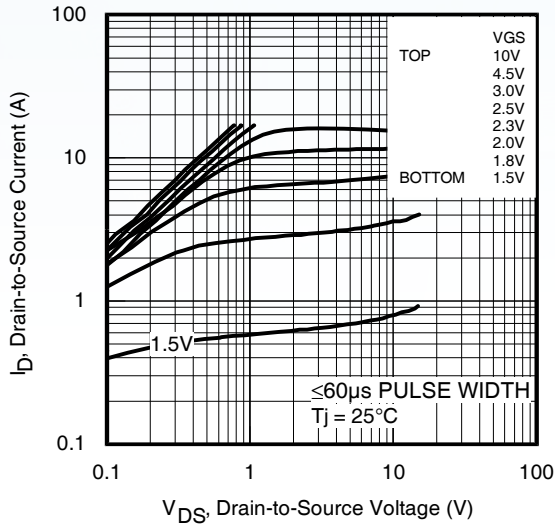


Fig 1. Typical Output Characteristics

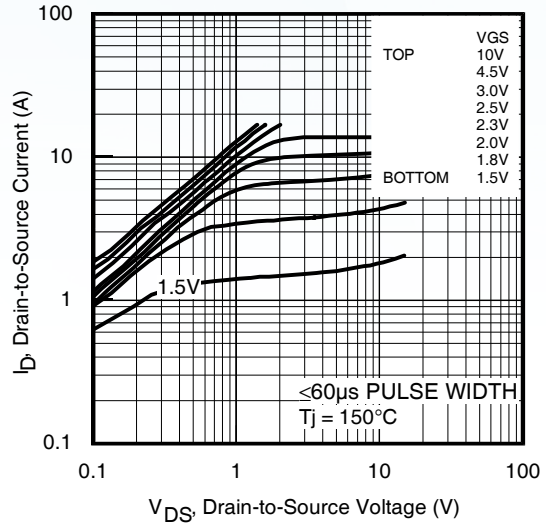


Fig 2. Typical Output Characteristics

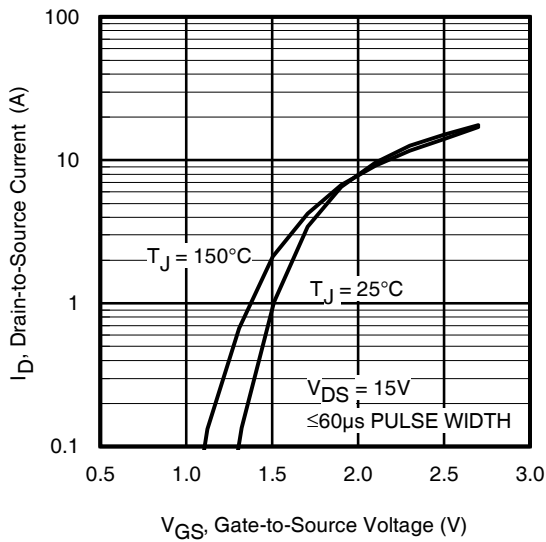


Fig 3. Typical Transfer Characteristics

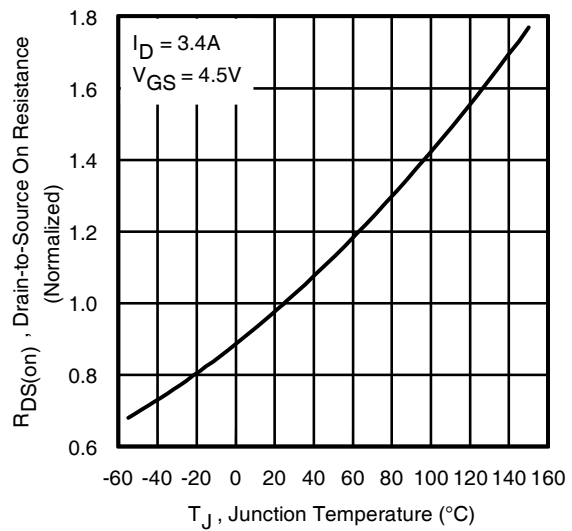


Fig 4. Normalized On-Resistance vs. Temperature

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Typical Electrical Characteristics

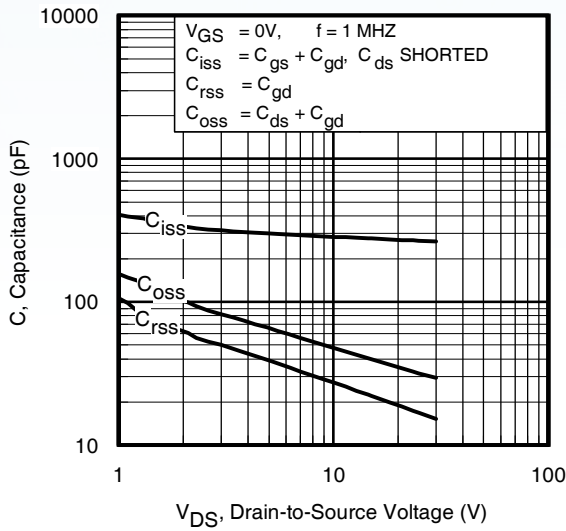


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

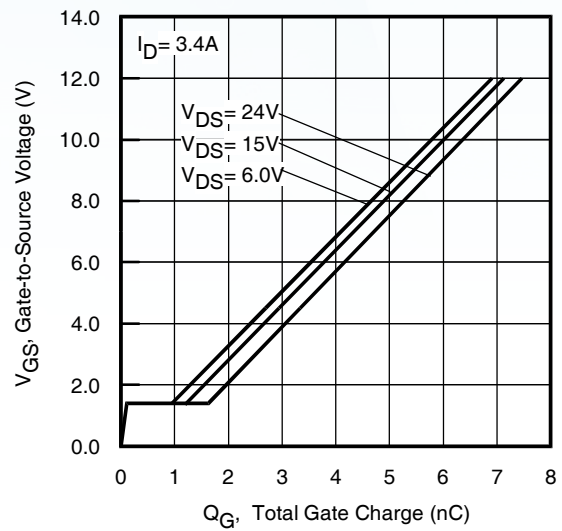


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

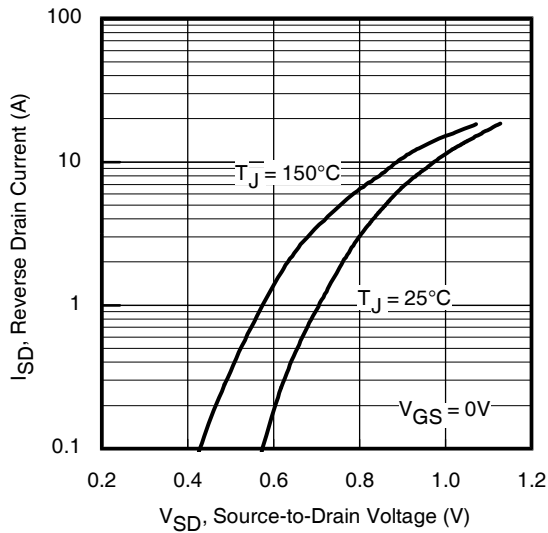


Fig 7. Typical Source-Drain Diode Forward Voltage

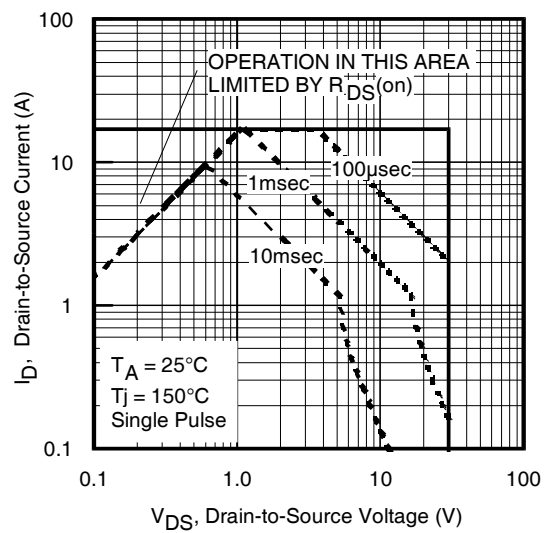


Fig 8. Maximum Safe Operating Area

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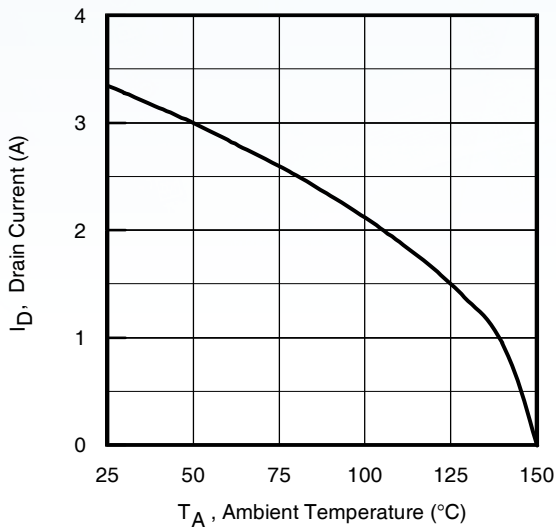


Fig 9. Maximum Drain Current vs. Ambient Temperature

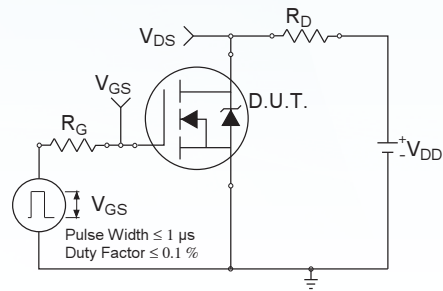


Fig 10a. Switching Time Test Circuit

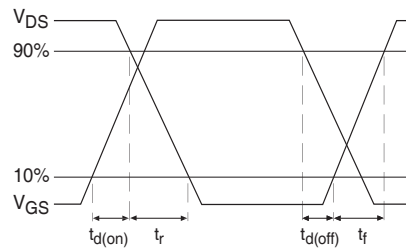


Fig 10b. Switching Time Waveforms

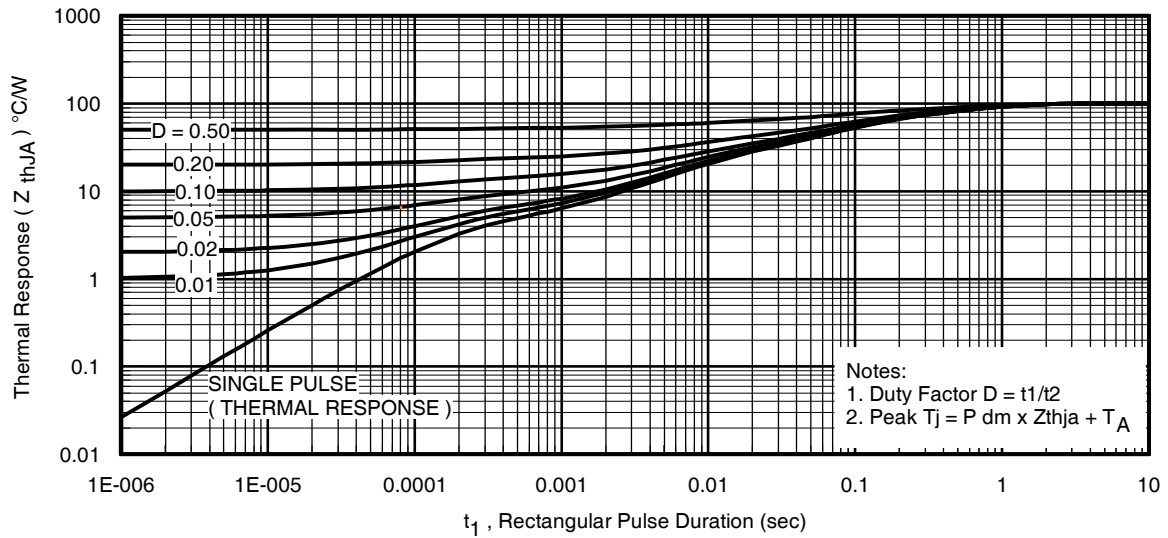


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

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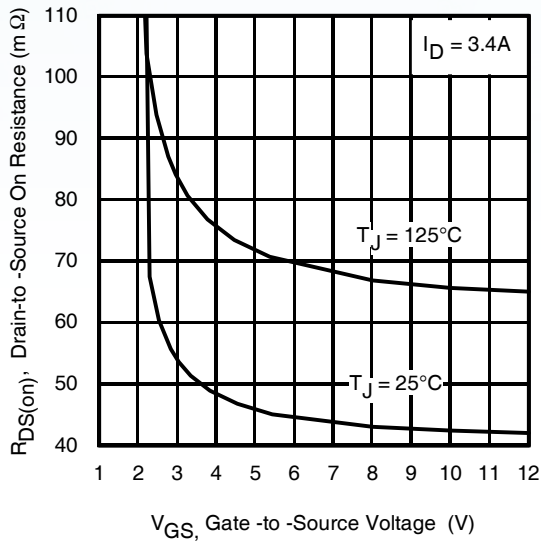


Fig 12. Typical On-Resistance vs. Gate Voltage

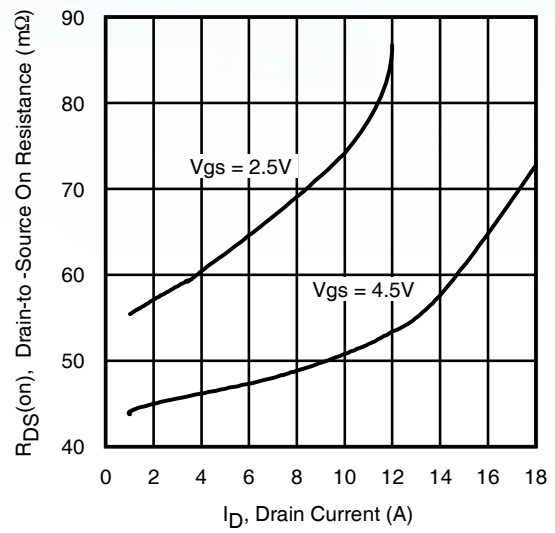


Fig 13. Typical On-Resistance vs. Drain Current

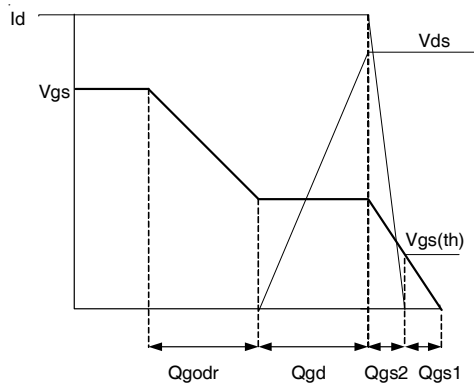


Fig 14a. Basic Gate Charge Waveform

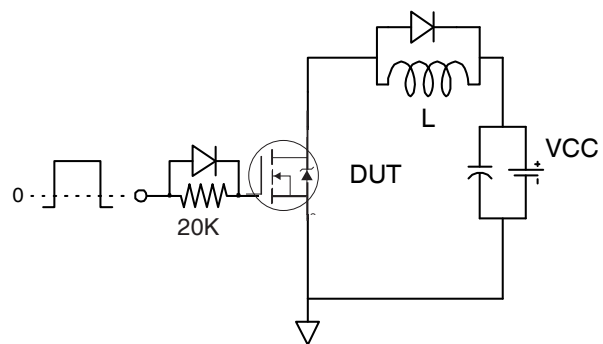


Fig 14b. Gate Charge Test Circuit

N-Channel MOSFET

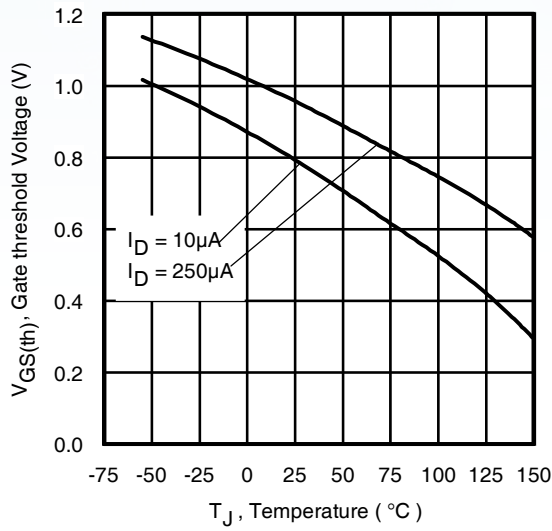


Fig 15. Typical Threshold Voltage vs. Junction Temperature

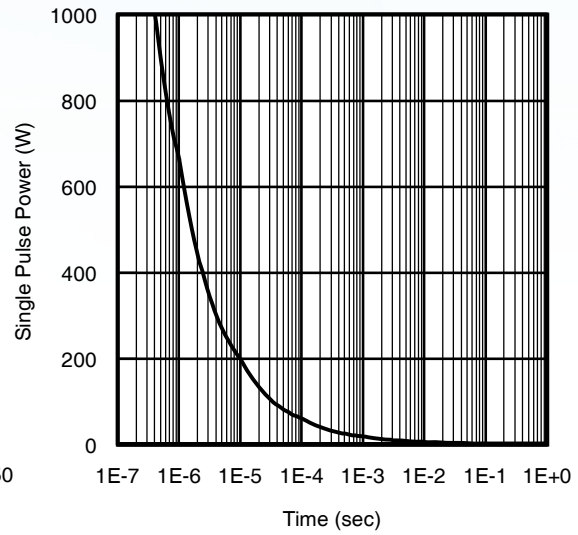
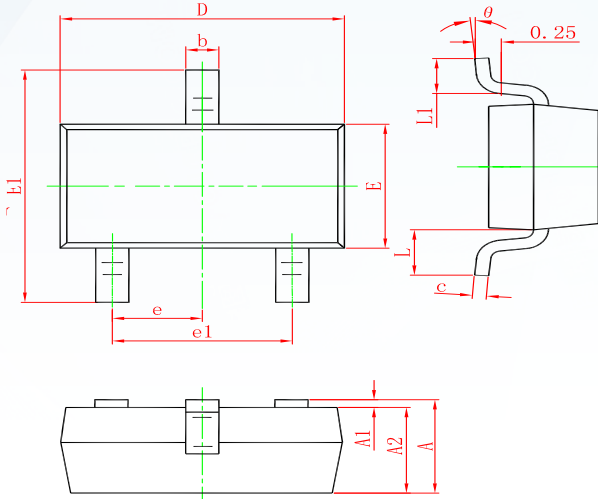


Fig 16. Typical Power vs. Time

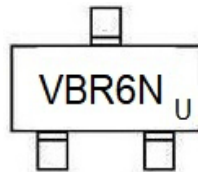
N-Channel MOSFET

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
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
IRLML6346	SOT-23	3000	Tape and reel

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