

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRLML0100
▶ Overseas	Part Number	IRLML0100
▶ Equivalent	Part Number	IRLML0100

EV is the abbreviation of name EVVO

N-Channel MOSFET

Application(s)

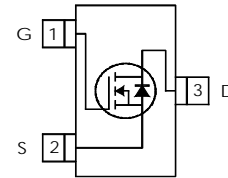
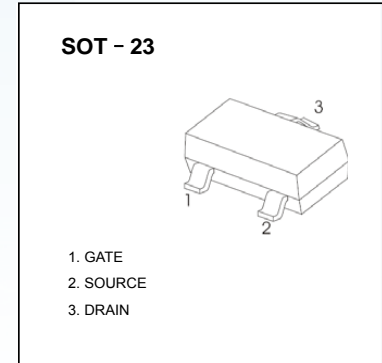
- Load/ System Switch

Features

- $V_{DS} (V) = 100V$
- $R_{DS(ON)} < 220 m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 235 m\Omega$ ($V_{GS} = 4.5V$)
- Industry-standard pinout
- Compatible with existing Surface Mount Techniques
- RoHS compliant containing no lead, no bromide and no halogen

Benefits

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



Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	100	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	1.6	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	1.3	
I_{DM}	Pulsed Drain Current	7.0	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation	1.3	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation	0.8	
	Linear Derating Factor	0.01	
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 ①		100	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient ($t < 10s$) ②		99	

① Repetitive rating; pulse width limited by max. junction temperature.

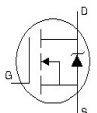
② Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.

③ Surface mounted on 1 in square Cu board

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Electric Characteristics @ T_J = 25°C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	100			V	V _{GS} = 0V, I _D = 250μA
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient		0.10		V/°C	Reference to 25°C, I _D = 1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance		190	235	mΩ	V _{GS} = 4.5V, I _D = 1.3A ②
			178	220		V _{GS} = 10V, I _D = 1.6A ②
V _{GS(th)}	Gate Threshold Voltage	1.0		2.5	V	V _{DS} = V _{GS} , I _D = 25μA
I _{DSS}	Drain-to-Source Leakage Current			20	μA	V _{DS} = 100V, V _{GS} = 0V
				250		V _{DS} = 100V, V _{GS} = 0V, T _J = 125°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		1.3		Ω	
g _{fs}	Forward Transconductance	5.7			S	V _{DS} = 50V, I _D = 1.6A
Q _g	Total Gate Charge		2.5		nC	I _D = 1.6A
Q _{gs}	Gate-to-Source Charge		0.5			V _{DS} = 50V
Q _{gd}	Gate-to-Drain ("Miller") Charge		1.2			V _{GS} = 4.5V ②
t _{d(on)}	Turn-On Delay Time		2.2		ns	V _{DD} = 50V ②
t _r	Rise Time		2.1			I _D = 1.0A
t _{d(off)}	Turn-Off Delay Time		9.0			R _G = 6.8Ω
t _f	Fall Time		3.6			V _{GS} = 4.5V
C _{iss}	Input Capacitance		290		pF	V _{GS} = 0V
C _{oss}	Output Capacitance		27			V _{DS} = 25V
C _{rss}	Reverse Transfer Capacitance		13			f = 1.0MHz

Source - Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)			1.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①			7.0		
V _{SD}	Diode Forward Voltage			1.3	V	T _J = 25°C, I _S = 1.1A, V _{GS} = 0V ②
t _{rr}	Reverse Recovery Time		20	30	ns	T _J = 25°C, V _R = 50V, I _F = 1.1A
Q _{rr}	Reverse Recovery Charge		13	20	nC	di/dt = 100A/μs ②

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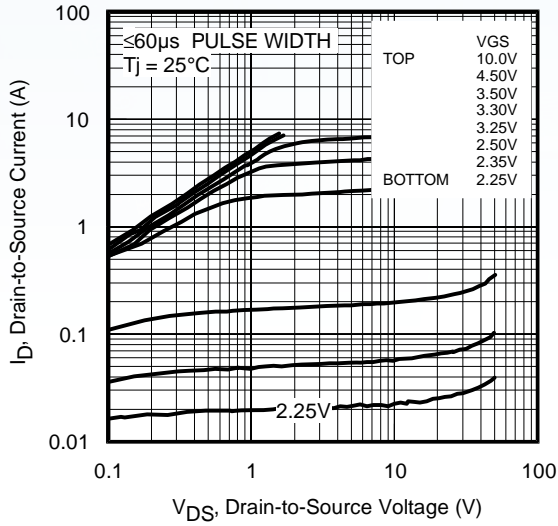


Fig 1. Typical Output Characteristics

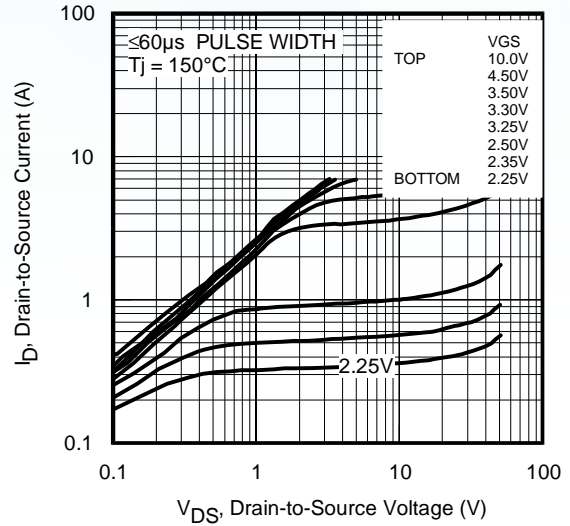


Fig 2. Typical Output Characteristics

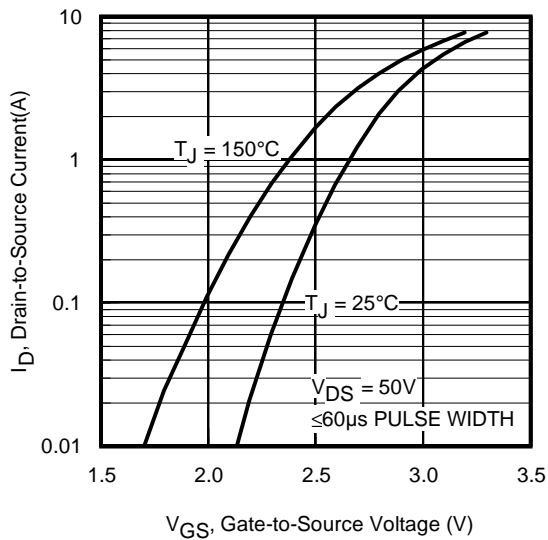


Fig 3. Typical Transfer Characteristics

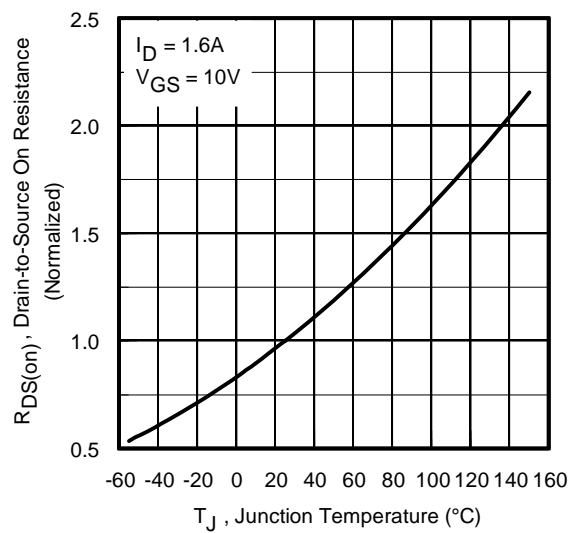


Fig 4. Normalized On-Resistance Vs. Temperature

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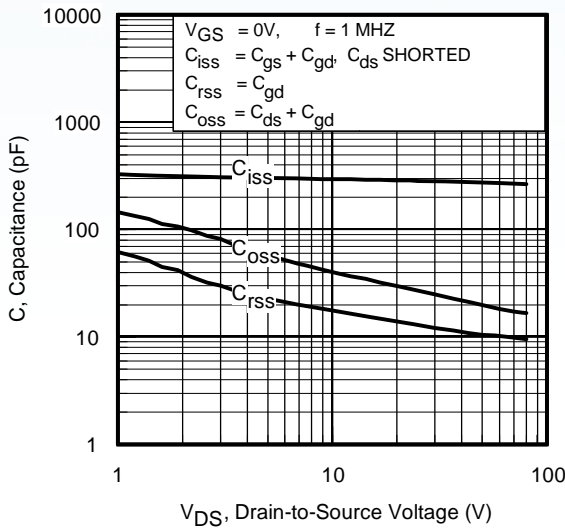


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

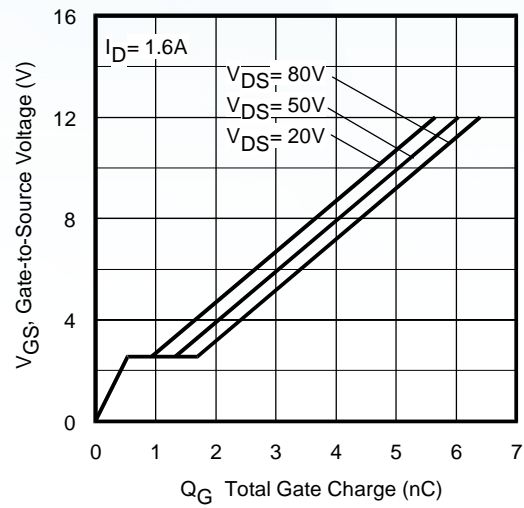


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

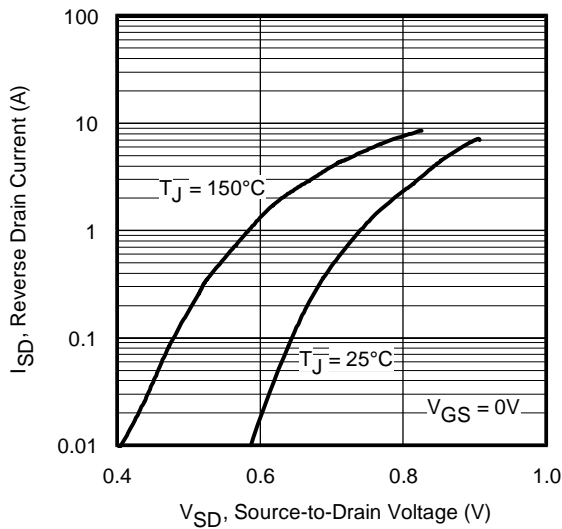


Fig 7. Typical Source-Drain Diode Forward Voltage

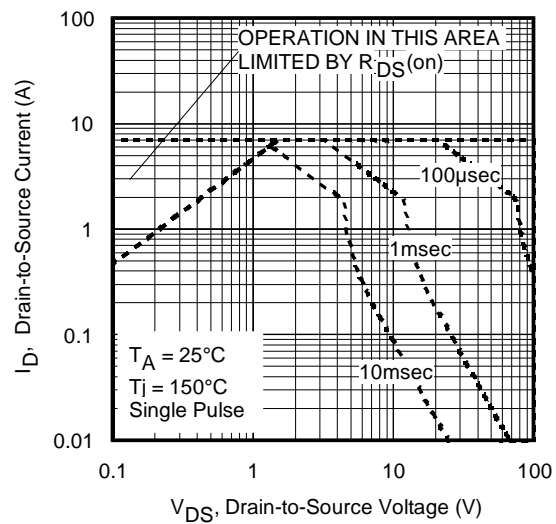


Fig 8. Maximum Safe Operating Area

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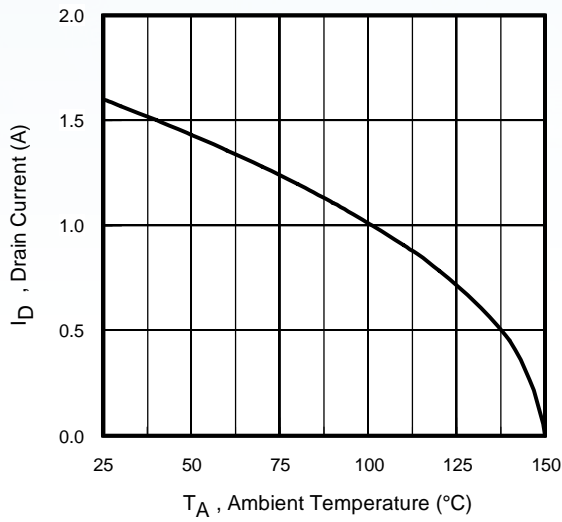


Fig 9. Maximum Drain Current Vs. Ambient Temperature

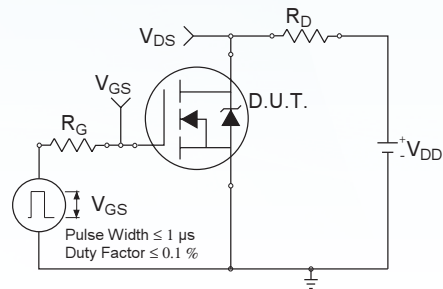


Fig 10a. Switching Time Test Circuit

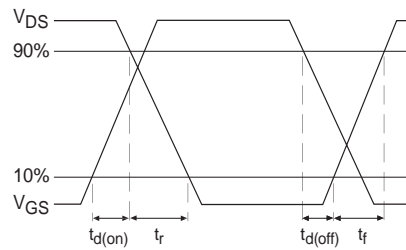


Fig 10b. Switching Time Waveforms

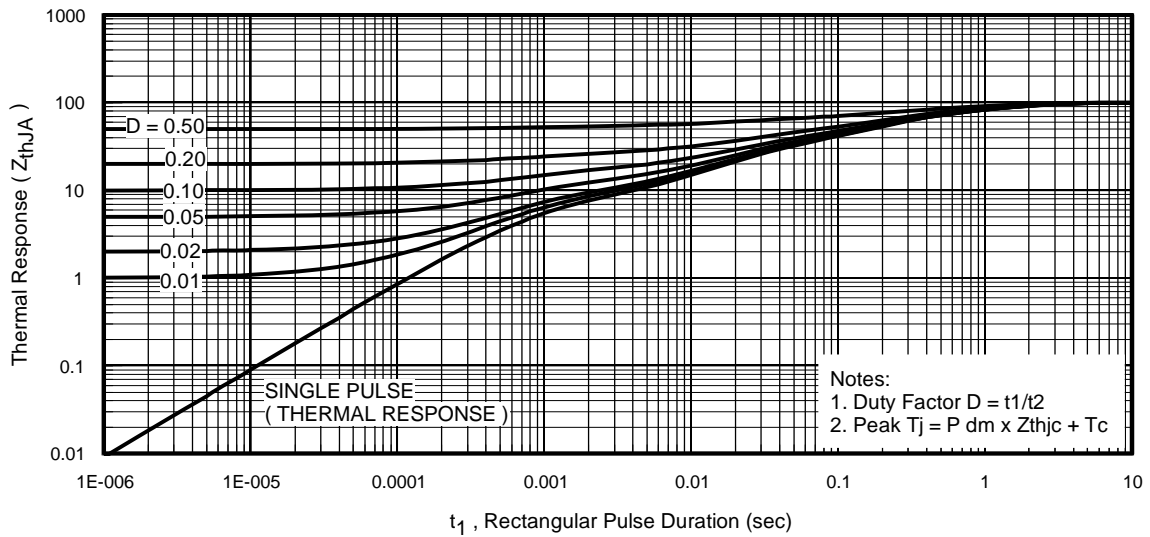


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

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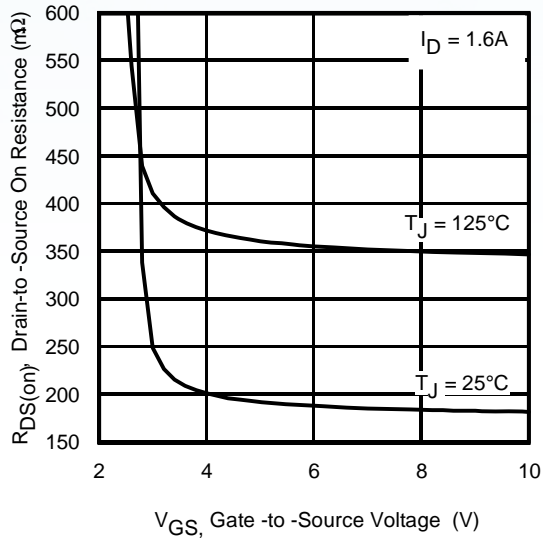


Fig 12. Typical On-Resistance Vs. Gate Voltage

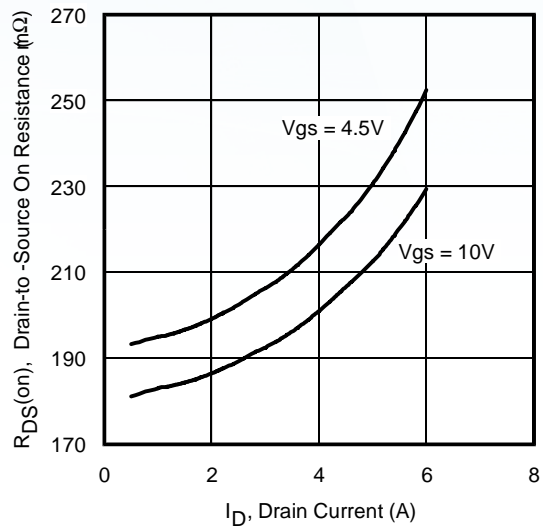


Fig 13. Typical On-Resistance Vs. Drain Current

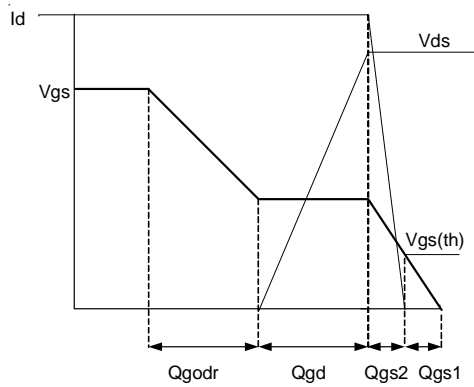


Fig 14a. Basic Gate Charge Waveform

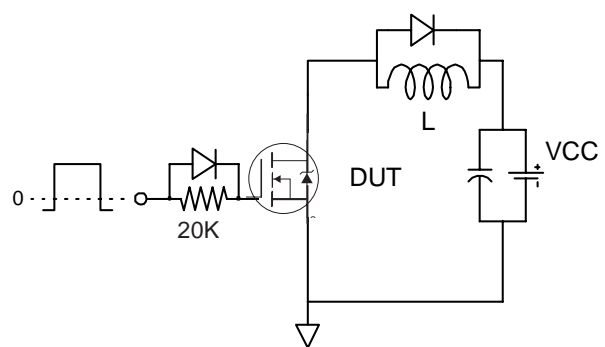


Fig 14b. Gate Charge Test Circuit

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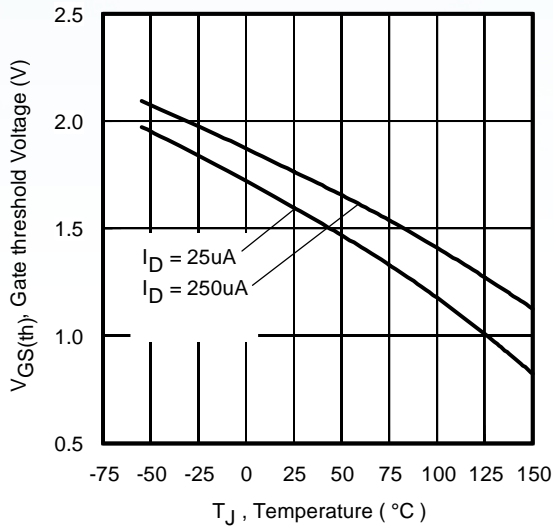


Fig 15. Typical Threshold Voltage Vs. Junction Temperature

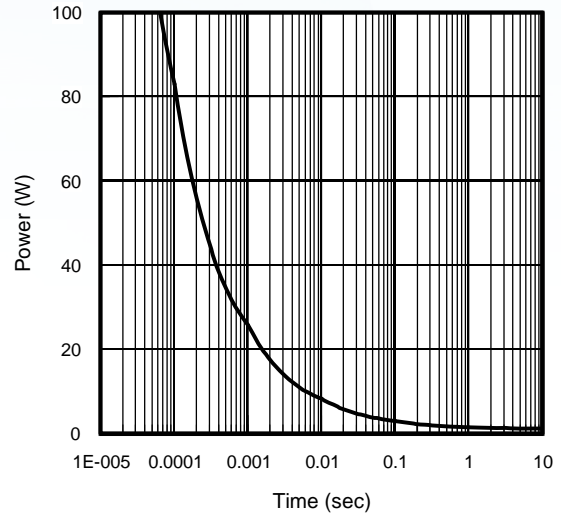
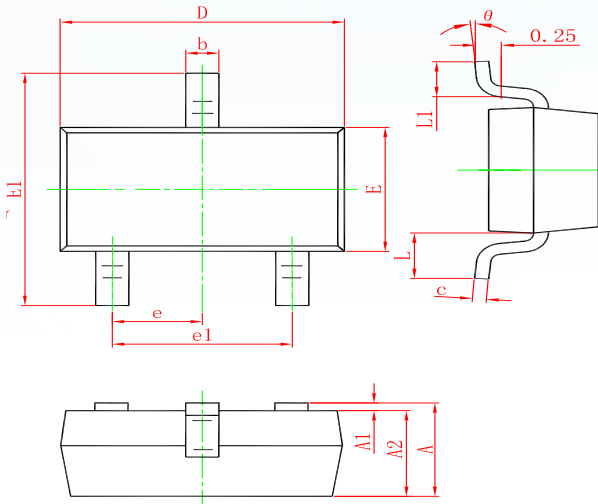


Fig 16. Typical Power Vs. Time

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
IRLML0100	SOT-23	3000	Tape and reel

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