



-100V 39mΩ P-Ch Power MOSFET

Features

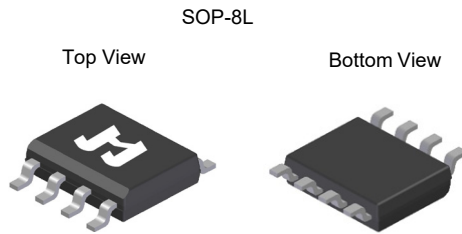
- Low On-Resistance
- Excellent Gate Charge x $R_{DS(ON)}$ Product (FOM)
- Pb-Free Lead Plating
- RoHS and Halogen-Free Compliant
- 100% UIS Tested, 100% R_g Tested

Product Summary

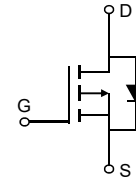
Parameter	Value	Unit
V_{DS}	-100	V
$V_{GS(th_Typ)}$	-2.0	V
I_D (@ $V_{GS} = -10V$) ⁽¹⁾	-6.3	A
$R_{DS(ON_Typ)}$ (@ $V_{GS} = -10V$)	39	mΩ
$R_{DS(ON_Typ)}$ (@ $V_{GS} = -4.5V$)	57	mΩ

Applications

- Battery Management
- DC/DC in Telecoms and Industrial
- Hard Switching and High Speed Circuit



Pin Configuration
Top View

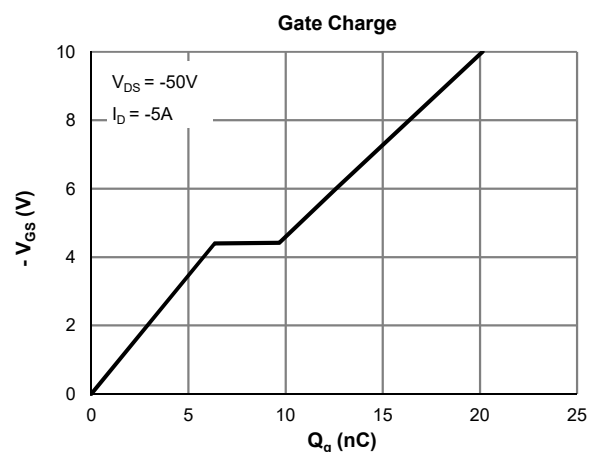
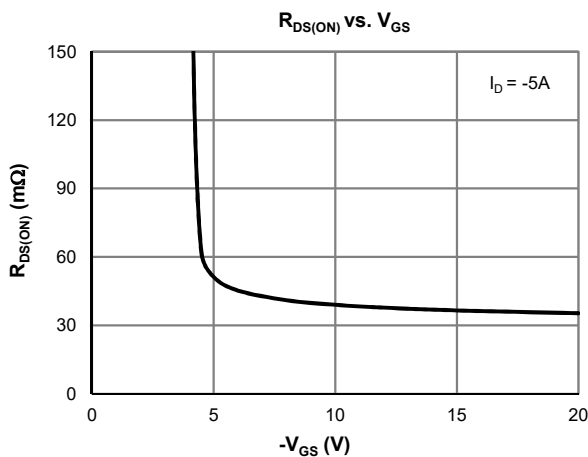


Ordering Information

Device	Package	# of Pins	Marking	MSL	T_J (°C)	Media	Quantity (pcs)
JMPL1050AP-13	SOP-8L	8	PL1050A	3	-55 to 150	13-inch Reel	2500

Absolute Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	-100	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ⁽¹⁾	I_D	$T_C = 25^\circ C$	-6.3
		$T_C = 100^\circ C$	-4.0
Pulsed Drain Current ⁽²⁾	I_{DM}	-17.3	A
Avalanche Current ⁽³⁾	I_{AS}	-27	A
Avalanche Energy ⁽³⁾	E_{AS}	109	mJ
Power Dissipation ⁽⁴⁾	P_D	$T_C = 25^\circ C$	4.2
		$T_C = 100^\circ C$	1.7
Junction & Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C





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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D = -250μA, V _{GS} = 0V	-100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -80V, V _{GS} = 0V T _J = 55°C			-1.0	μA
					-5.0	
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-2.0	-3.0	V
Static Drain-Source ON-Resistance	R _{DS(ON)}	V _{GS} = -10V, I _D = -5A		39	50	mΩ
		V _{GS} = -4.5V, I _D = -3A		57	70	mΩ
Forward Transconductance	g _{FS}	V _{DS} = -5V, I _D = -15A		30		S
Diode Forward Voltage	V _{SD}	I _S = -1A, V _{GS} = 0V		-0.7	-1.0	V
Diode Continuous Current	I _S	T _C = 25°C			-4.2	A

DYNAMIC PARAMETERS ⁽⁵⁾

Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -50V, f = 1MHz		1412		pF
Output Capacitance	C _{oss}			222		pF
Reverse Transfer Capacitance	C _{rss}			2.6		pF
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		10.2		Ω

SWITCHING PARAMETERS ⁽⁵⁾

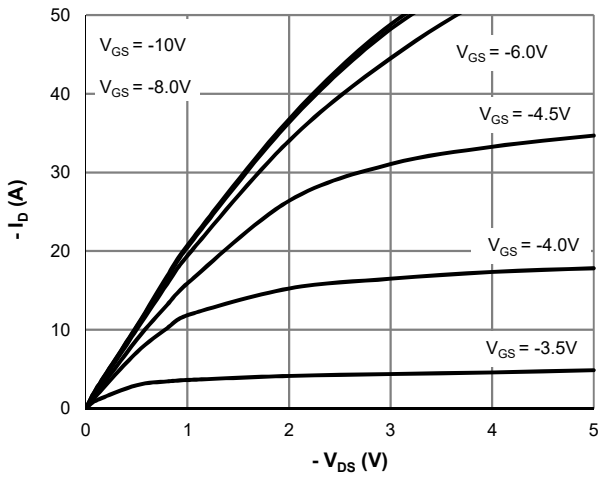
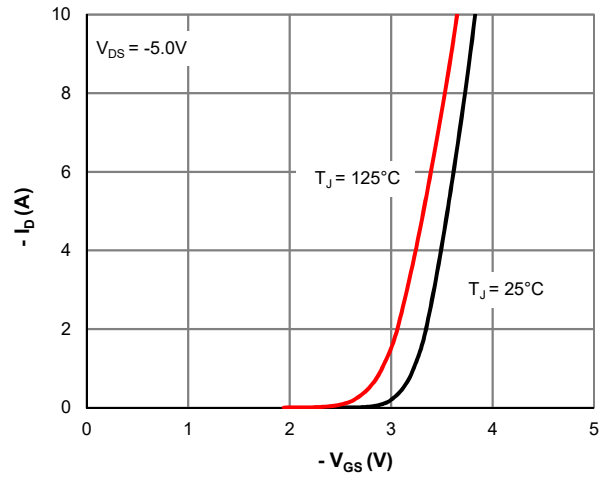
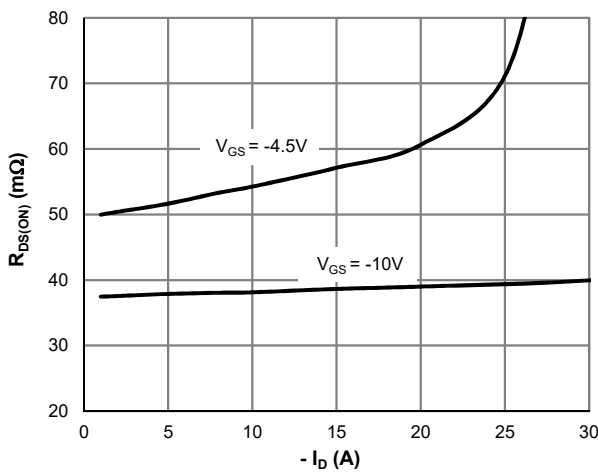
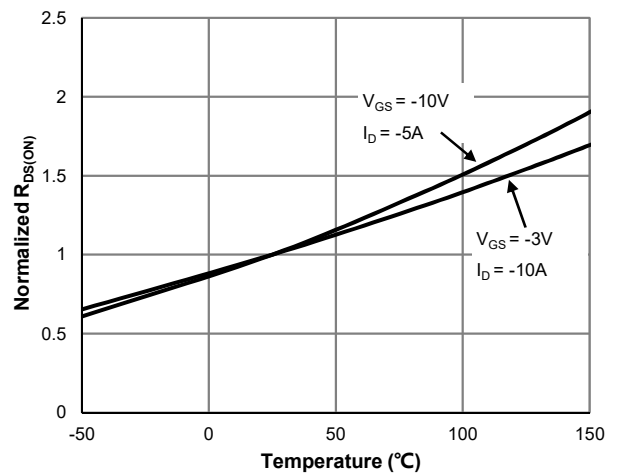
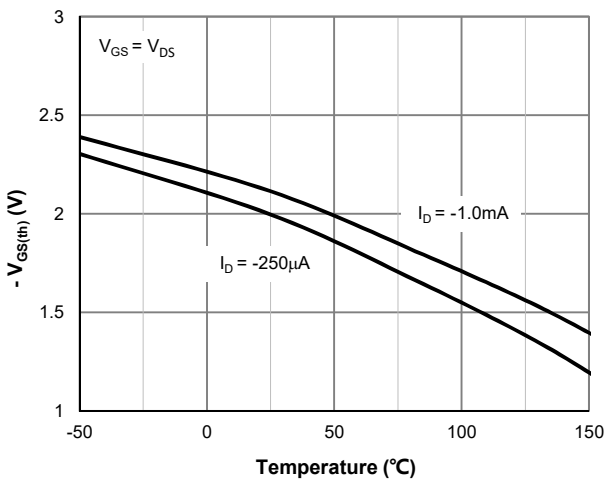
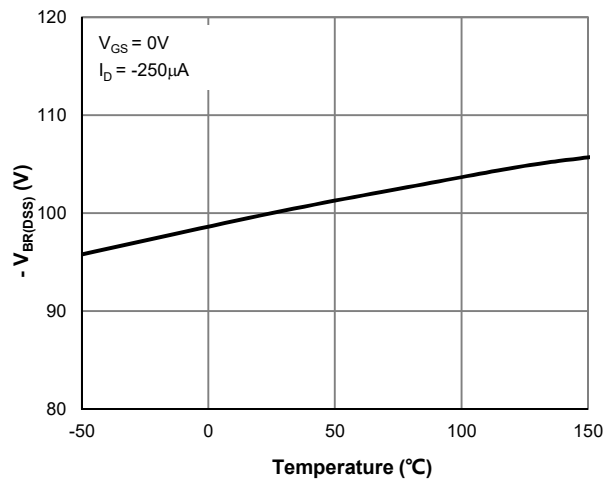
Total Gate Charge (@ V _{GS} = -10V)	Q _g	V _{GS} = 0 to -10V V _{DS} = -50V, I _D = -5A		20		nC
Total Gate Charge (@ V _{GS} = -6.0V)	Q _g			12.6		nC
Gate Source Charge	Q _{gs}			6.4		nC
Gate Drain Charge	Q _{gd}			3.3		nC
Turn-On DelayTime	t _{D(on)}	V _{GS} = -10V, V _{DS} = -50V R _L = 10Ω, R _{GEN} = 6Ω		10.7		ns
Turn-On Rise Time	t _r			56		ns
Turn-Off DelayTime	t _{D(off)}			45		ns
Turn-Off Fall Time	t _f			81		ns
Body Diode Reverse Recovery Time	t _{rr}		I _F = -5A, dI _F /dt = -100A/μS		51	
Body Diode Reverse Recovery Charge	Q _{rr}	I _F = -5A, dI _F /dt = -100A/μS		130		nC

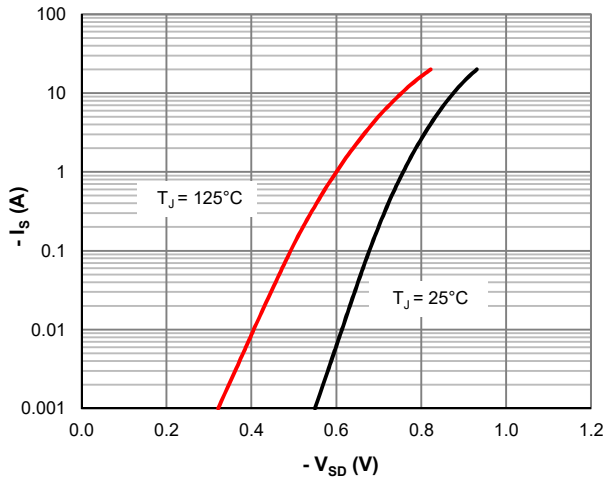
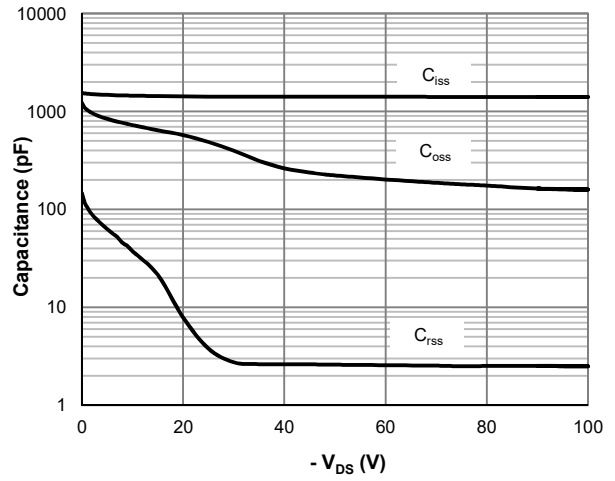
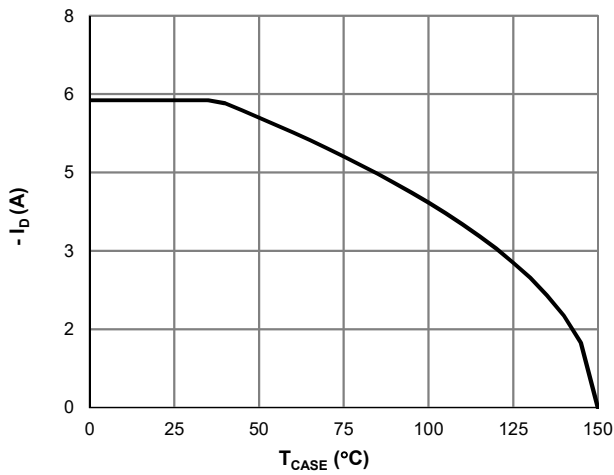
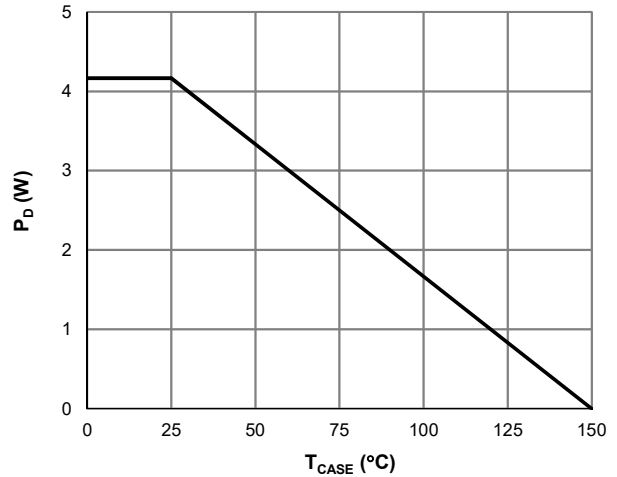
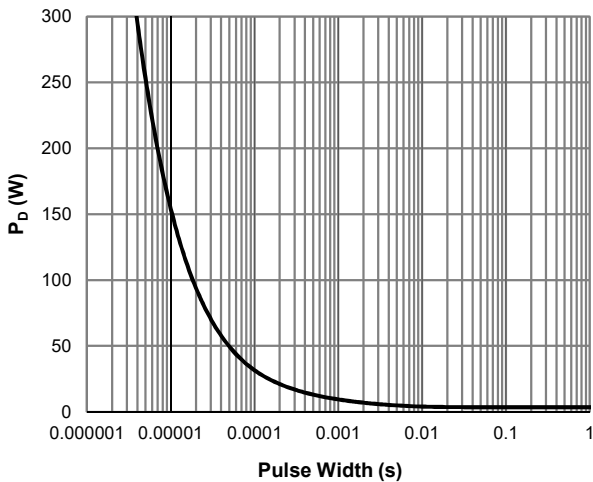
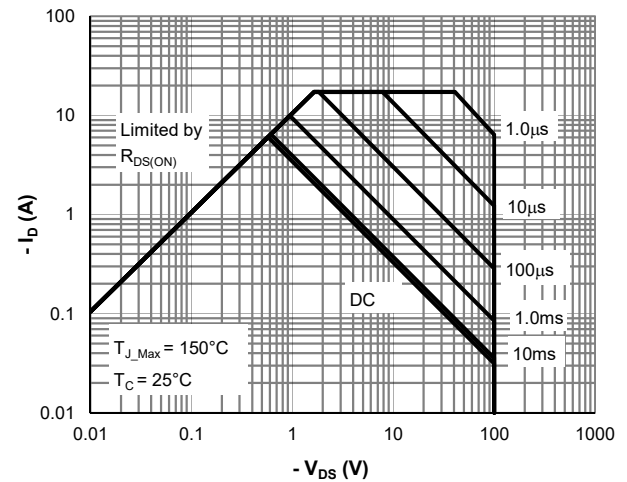
Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient (t ≤ 10s)	R _{θJA}	30	36	°C/W
Thermal Resistance, Junction-to-Ambient (steady state)	R _{θJA}	40	50	°C/W

Notes:

1. Computed continuous current assumes the condition of T_{J_max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under T_{J_max} = 150°C.
3. This single-pulse measurement was taken under the following condition [L = 300μH, V_{GS} = -10V, V_{DD} = -50V] while its value is limited by T_{J_max} = 150°C.
4. The power dissipation P_D is based on T_{J_max} = 150°C.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical & Thermal Characteristics

Figure 1: Saturation Characteristics

Figure 2: Transfer Characteristics

Figure 3: $R_{DS(ON)}$ vs. Drain Current

Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

Figure 5: $V_{GS(th)}$ vs. Junction Temperature

Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Typical Electrical & Thermal Characteristics

Figure 7: Body-Diode Characteristics

Figure 8: Capacitance Characteristics

Figure 9: Current De-rating

Figure 10: Power De-rating

Figure 11: Single Pulse Power Rating, Junction-to-Case

Figure 12: Maximum Safe Operating Area



Typical Electrical & Thermal Characteristics

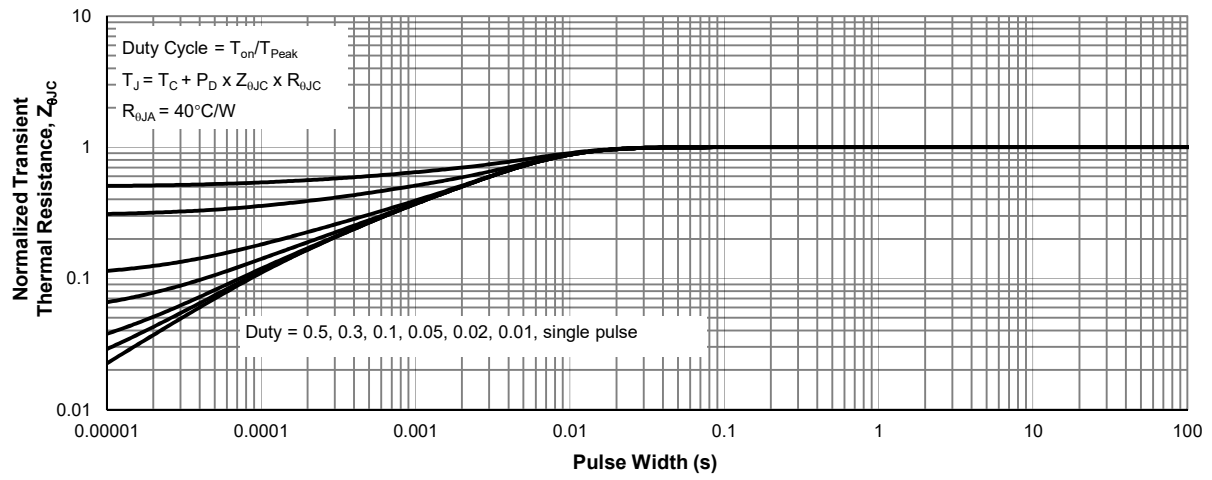
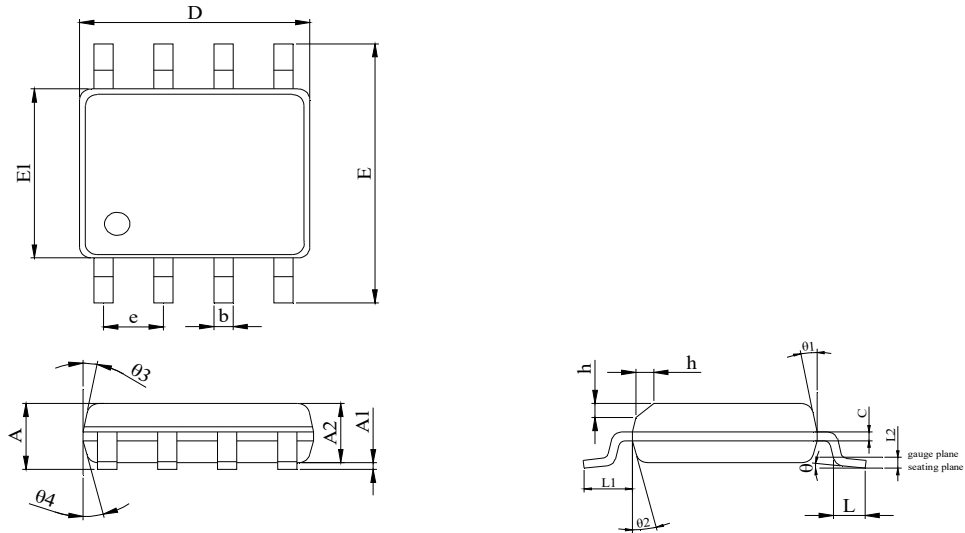
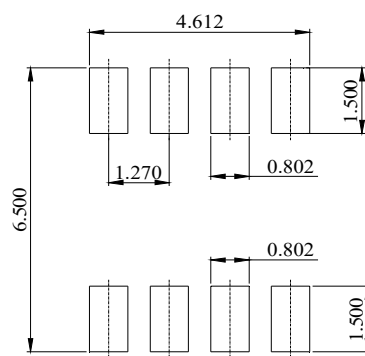


Figure 13: Normalized Maximum Transient Thermal Impedance

SOP-8L Package Information
Package Outline


DIM	MILLIMETER		
	MIN.	NOM.	MAX.
A	1.35	1.50	1.65
A1	0.05	0.10	0.15
A2	1.35	1.40	1.50
b	0.38	--	0.50
c	0.17	--	0.25
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27(BSC)		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25 BSC		
h	0.30	0.40	0.50
θ	0°	--	8°
θ_1	10°	12°	14°
θ_2	8°	10°	12°
θ_3	10°	12°	14°
θ_4	8°	10°	12°

Recommended Soldering Footprint


DIMENSIONS: MILLIMETERS

JieJie Microelectronics Co., Ltd.