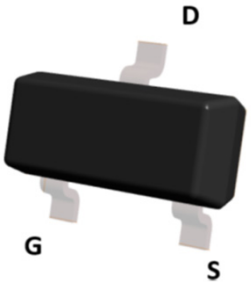
P-Channel MOSFET

Description

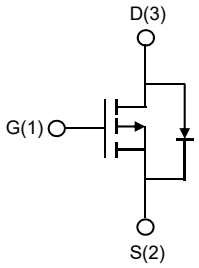
The MOSFET provide the best combination of fast switching , low on-resistance and cost-effectiveness.

- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage

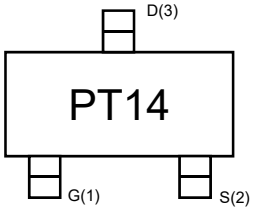
MOSFET Product Summary		
V_{DS}(V)	$R_{DS(on)}$(mΩ)	I_D(A)
-12	32@V_{GS} = -4.5V	-4.0
	42@V_{GS} = -2.5V	
	63@V_{GS} = -1.8V	



Top View



Circuit Diagram



Marking (Top View)

Applications

- Battery operated systems
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

Absolute maximum rating@25℃

Rating		Symbol	Value	Units
Drain-source Voltage		V_{DS}	-12	V
Gate-source Voltage		V_{GS}	±12	V
Drain Current		I_D	-4.0	A
Pulsed Drain Current		I_{DM}	-35	A
Total Power Dissipation	T_A=25℃	P_D	0.83	W
	T_A=125℃		0.17	
Avalanche Energy, Single Pulse		E_{AS}	27.31	mJ
Junction and Storage Temperature Range		T_J,T_{STG}	-55~+150	℃

Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-12	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -12V,V_{GS} = 0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4	-	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -4.3A	-	32	45	mΩ
		V_{GS} = -2.5V, I_D = -2.5A	-	42	60	
		V_{GS} = -1.8V, I_D = -2.0A	-	63	100	
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS} = -10V,V_{GS} = 0V, f = 1MHz	-	859	-	pF
Output Capacitance	C_{oss}		-	122	-	
Reverse Transfer Capacitance	C_{rss}		-	106	-	
Switching Parameters						
Turn-on Delay Time	$t_{D(on)}$	V_{Gen} = -4.5V,V_{DD} = -10V, R_G = 1Ω,I_D = -3.3A	-	6.0	-	ns
Turn-on Rise Time	t_r		-	22.5	-	
Turn-off Delay Time	$t_{D(off)}$		-	29	-	
Turn-off Fall Time	t_r		-	35	-	

Typical Characteristics

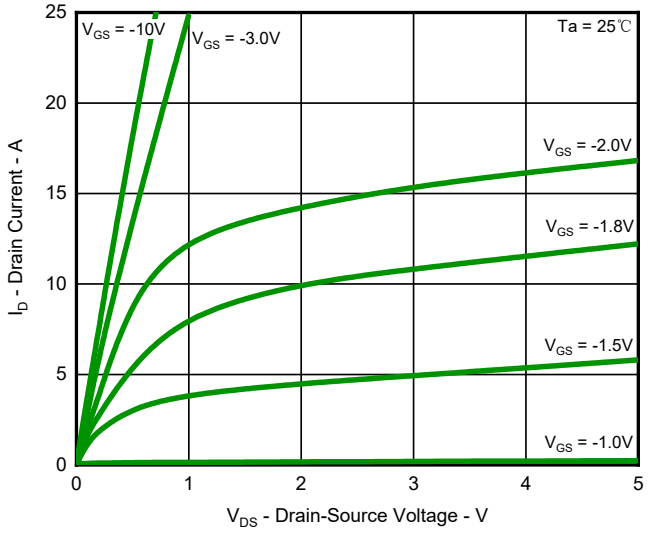


Fig.1 Output Characteristics

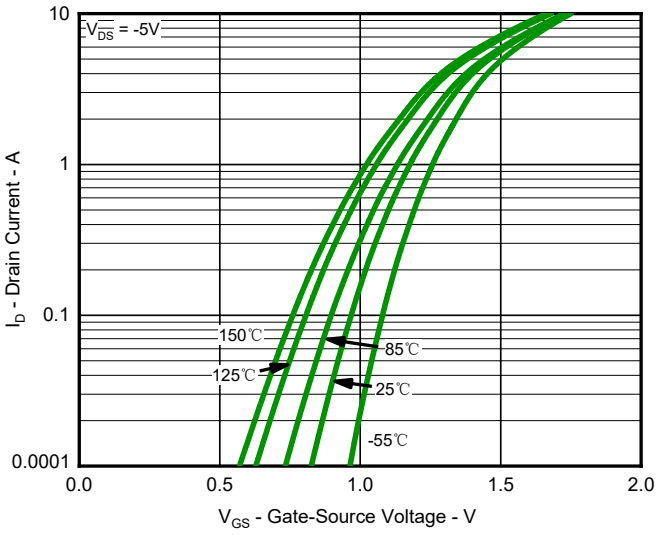


Fig.2 Typical Transfer Characteristic

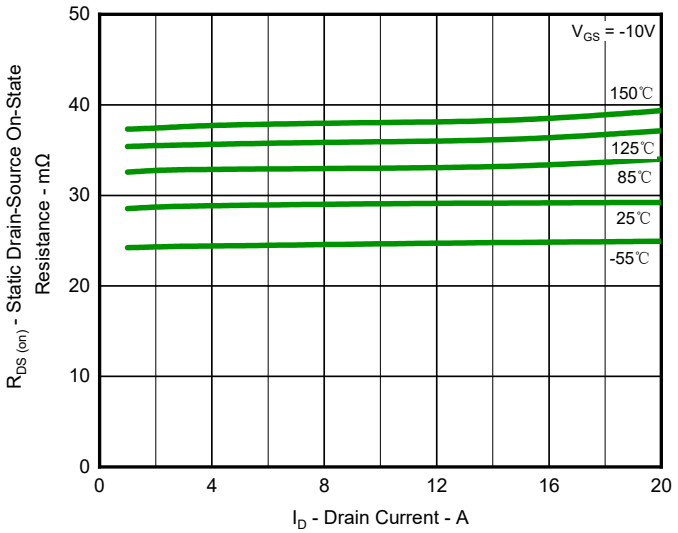


Fig.3 Typical On-Resistance vs Drain Current and Temperature

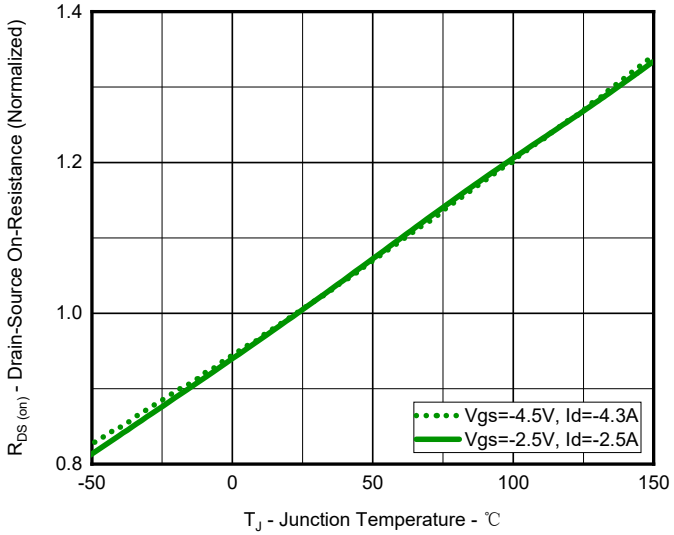


Fig.4 On-Resistance Variation with Temperature(I)

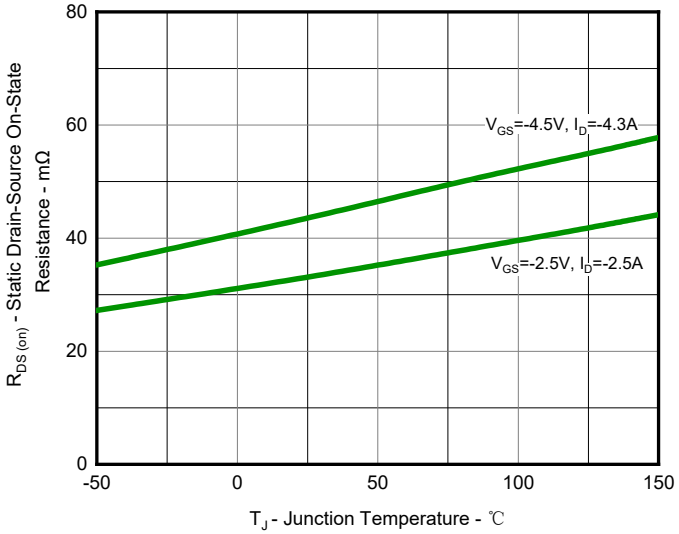


Fig.5 On-Resistance Variation with Temperature(II)

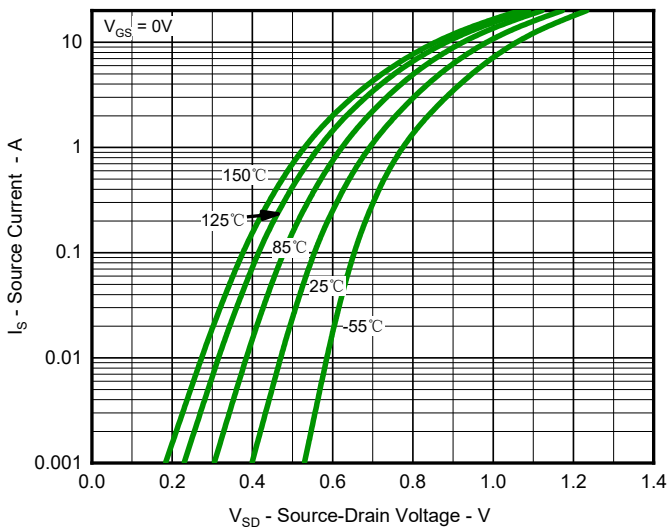


Fig.6 Diode Forward Voltage vs. Current

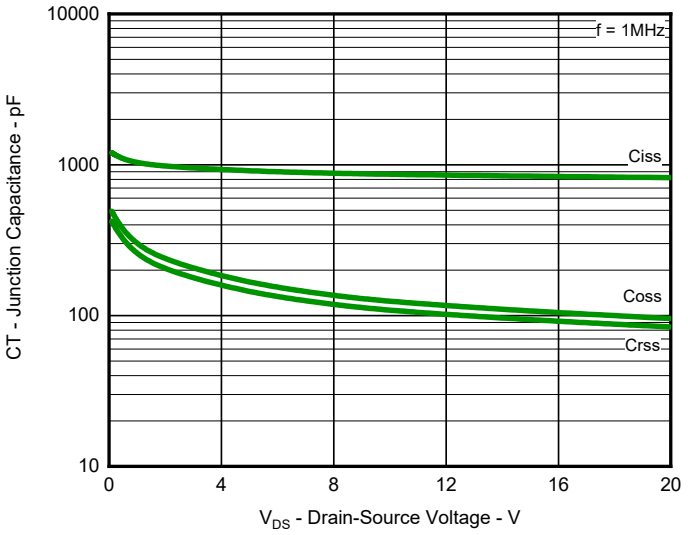


Fig.7 Typical Junction Capacitance

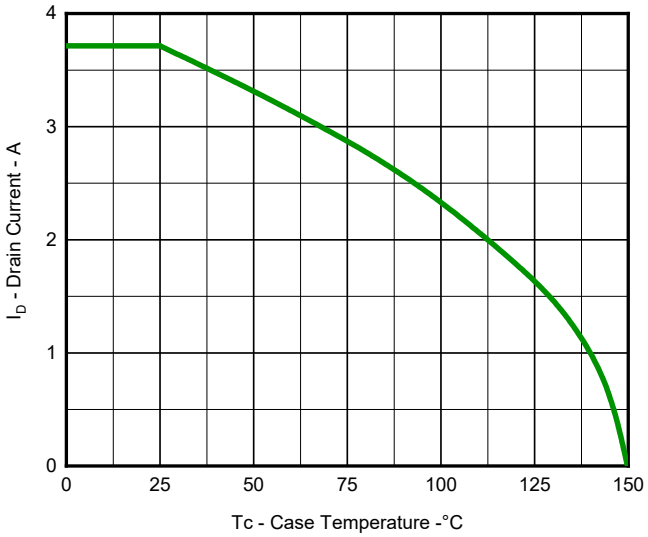


Fig.8 Maximun Drain Current vs. Case Temperature

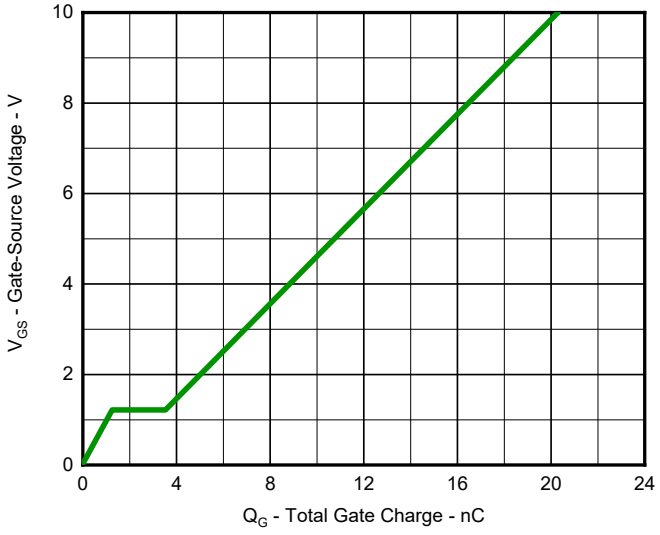


Fig.9 Gate Charge Characteristics

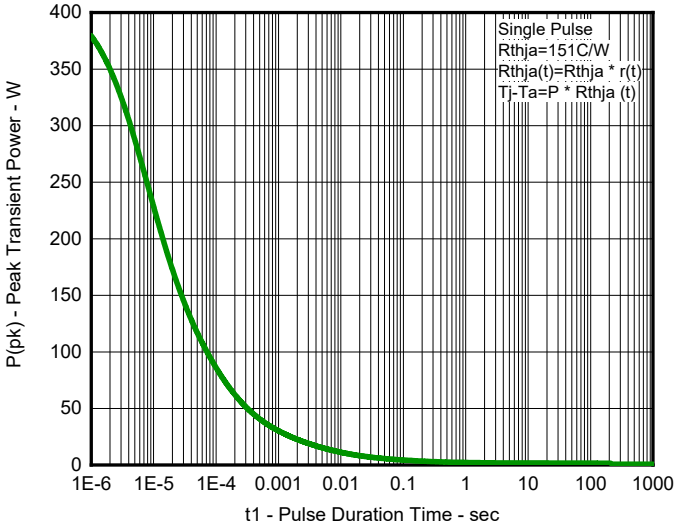


Fig.10 Single Pulse Maximum Power Dissipation

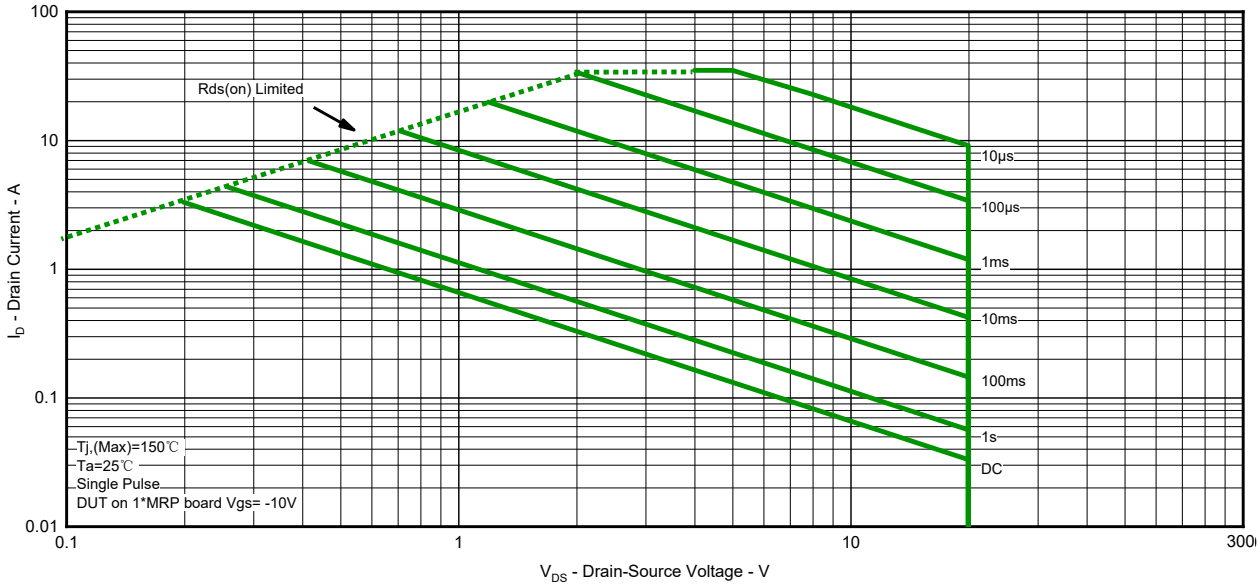


Fig.11 Safe Operation Area

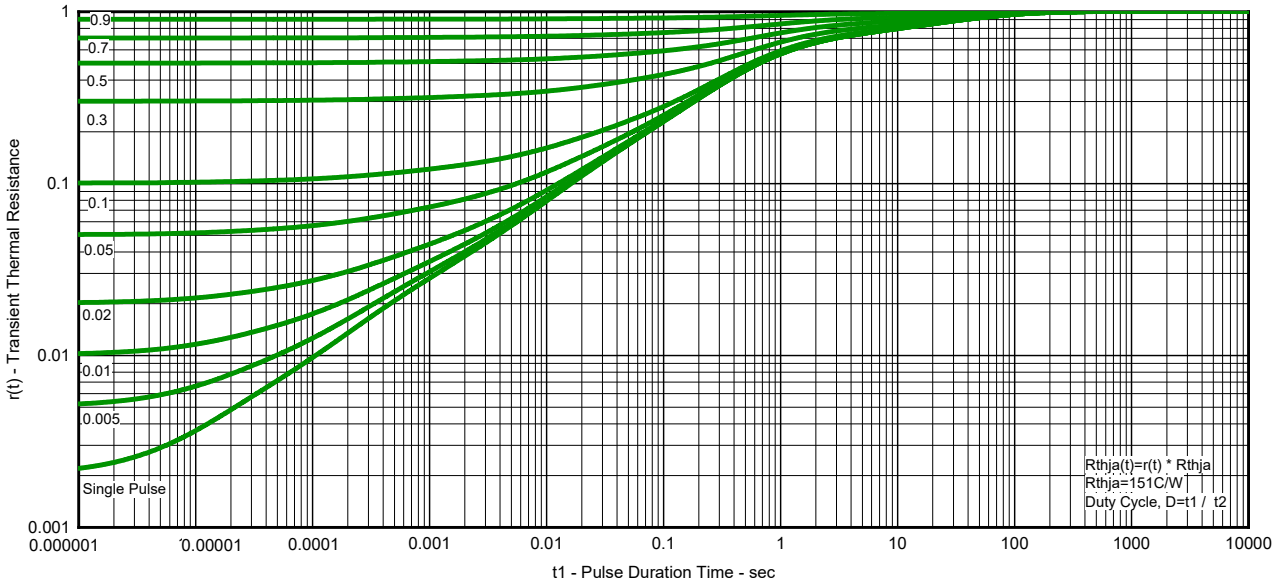
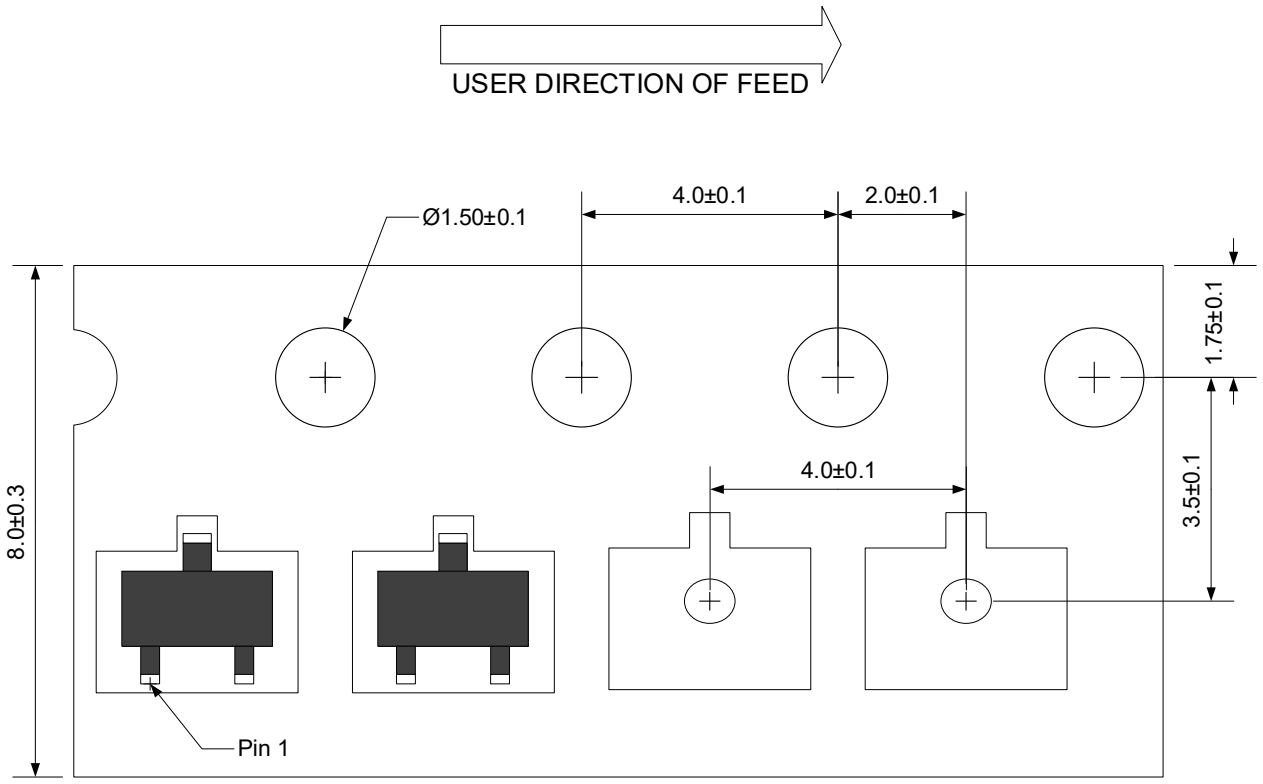


Fig.12 Transient Thermal Resistance

Ordering information

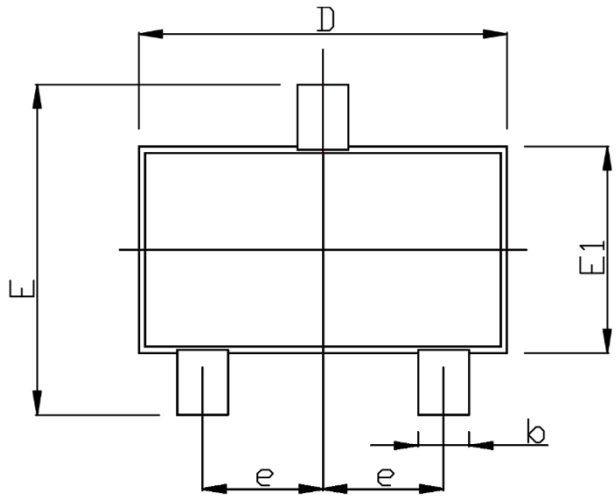
Device	Package	Reel	Shipping
PPMT12V4	SOT-23 (Pb-Free)	7"	3000 / Tape & Reel

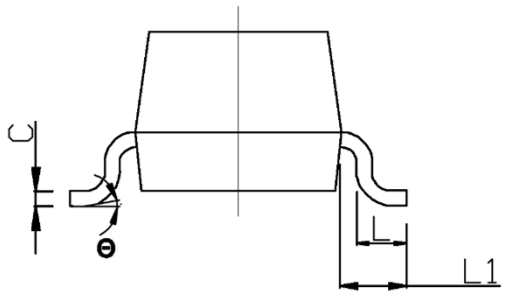
Load with information

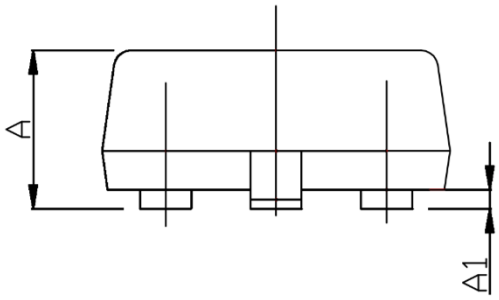


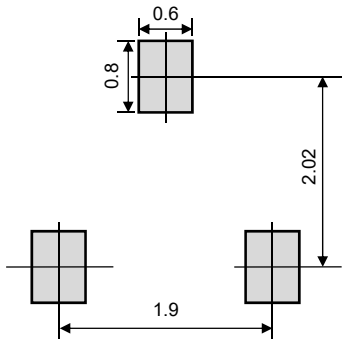
Unit:mm

Product dimension (SOT-23)









Suggested PCB Layout

Unit:mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	-	1.35	-	0.053
A1	0.04	0.15	0.002	0.006
b	0.30	0.50	0.012	0.020
c	0.08	0.21	0.003	0.008
D	2.72	3.12	0.107	0.123
E	2.10	2.64	0.083	0.104
E1	1.10	1.50	0.043	0.059
e	0.95 BSC		0.037 BSC	
L	0.20	0.48	0.008	0.019
L1	0.50	0.60	0.020	0.024
θ	0°	8°	0°	8°

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