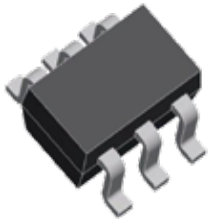
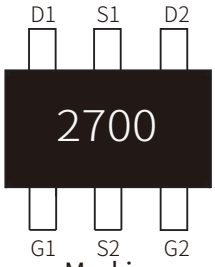
FEATURES

- Low On-Resistance
- Low Gate Threshold Voltage VGS(TH) < 1V
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Complementary Pair MOSFET
- Ultra-Small Surface Mount Package
- ESD Protected Gate to 2.5kV HBM



SOT-23-6L



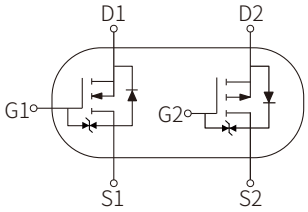
Marking

APPLICATION

- Portable Electronics

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS(T_a=25°C)

Parameter		Symbol	Value		Unit
			N-channel	P-channel	
Drain-Source Voltage		V_{DS}	20	-20	V
Drain Current (Notes5)	T_A=25°C	I_D	1.30	-1.1	A
	T_A=85°C		0.95	-1.0	A
Drain Current - Pulsed		I_{DM}	5	-2.5	A
Gate-Source Voltage		V_{GS}	±10	±10	V
Power Dissipation (Notes5)		P_D	1.12		W
Operating junction and storage temperature rang		T_J, T_{STG}	-55 to 150		°C
Thermal Resistance- Junction to Ambient (Notes5)		$R_{\theta JA}$	111		°C/W

Note: 5. For a device mounted on 25mm x 25mm FR-4 PCB board with a high coverage of single sided 1oz copper, in still air conditions with two active die.

ELECTRICAL CHARACTERISTICS(T_a=25°C)

N-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics (Note 6)						
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	20			V
Drain Leakage Curren	I_{DSS}	V_{DS}=20V,V_{GS}=0V			1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±10V,V_{DS}=0V			±10	μA
ON Characteristics(Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	0.4	0.65	0.9	V
On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=0.5A		125	165	mΩ
		V_{GS}=2.5V,I_D=0.3A		190	300	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=16V,V_{GS}=0V,F=1.0MHz		60		pF
Output Capacitance	C_{oss}			9		
Reverse Transfer Capacitance	C_{rss}			5		
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DD}=10V,R_L=47Ω V_{GS}=4.5V,R_G=10Ω,I_D=200mA		5		ns
Turn–On Rise Time	t_r			7		
Turn–Off Delay Time	$t_{d(off)}$			26		
Turn–Off Fall Time	t_f			12		
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=10V,I_D=250mA		736		nC
Gate Source Charge	Q_{gs}			93		
Gate Drain Charge	Q_{gd}			116		
Drain-source Diode Characteristics						
Diode Forward Voltage(Note 6)	V_{SD}	V_{GS}=0V,I_S=150mA		0.7	1.2	V

P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics(Note 6)						
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-20			V
Drain Leakage Curren	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			-1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±10V,V_{DS}=0V			±10	μA
ON Characteristics(Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=-250μA	-0.4	-0.65	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-4.5V,I_D=-0.5A		365	410	mΩ
		V_{GS}=-2.5V,I_D=-0.4A		520	680	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-16V,V_{GS}=0V,f=1.0MHz		59		pF
Output Capacitance	C_{oss}			12		
Reverse Transfer Capacitance	C_{rss}			6		
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DD}=-10V,R_L=47Ω V_{GS}=-4.5V,R_G=10Ω,I_D = -200mA		5		ns
Turn–On Rise Time	t_r			8		
Turn–Off Delay Time	$t_{d(off)}$			28		
Turn–Off Fall Time	t_f			20		
Total Gate Charge	Q_g	V_{GS}=-4.5V,V_{DS}=-10V,I_D=-250mA		622		nC
Gate Source Charge	Q_{gs}			100		
Gate Drain Charge	Q_{gd}			132		
Drain-source Diode Characteristics						
Diode Forward Voltage(Note 6)	V_{SD}	V_{GS}=0V,I_S=-150mA		-0.8	-1.2	V

Note: 6. Short duration pulse test used to minimize self-heating effect.

PARAMETER CHARACTERISTIC CURVE

N-Channel

Figure 1: Typical Output Characteristics

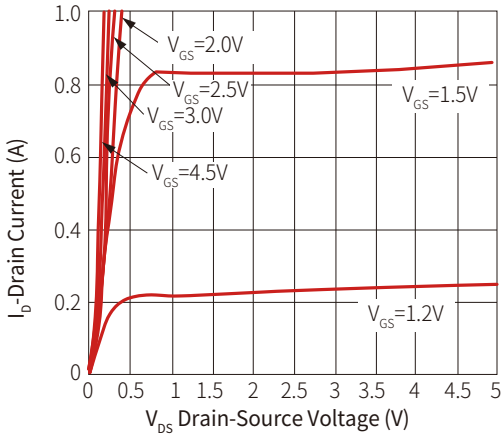


Figure 2: Typical Transfer Characteristic

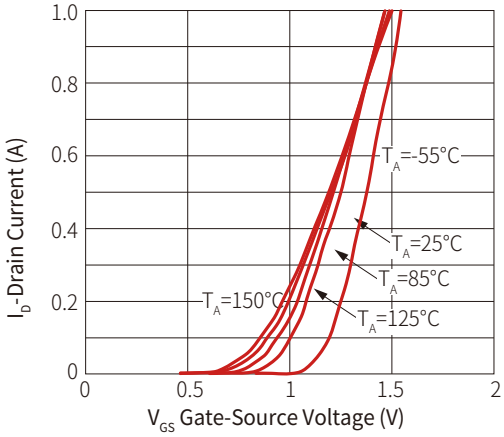


Figure 3: Typical On-Resistance vs. Drain Current and Gate Voltage

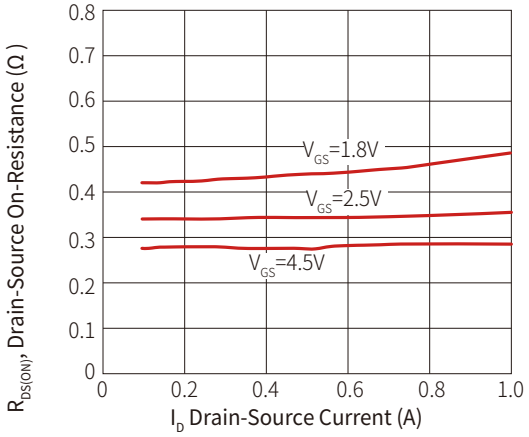


Figure 4: Typical On-Resistance vs. Drain Current and Temperature

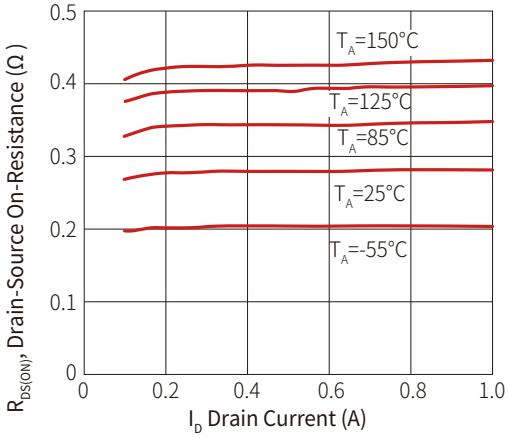


Figure 5: On-Resistance Variation with Temperature

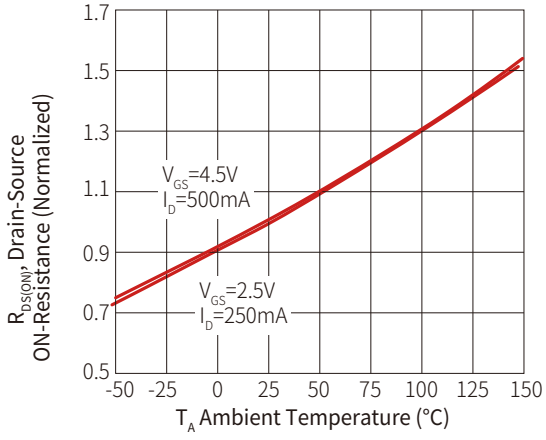


Figure 6: On-Resistance Variation with Temperature

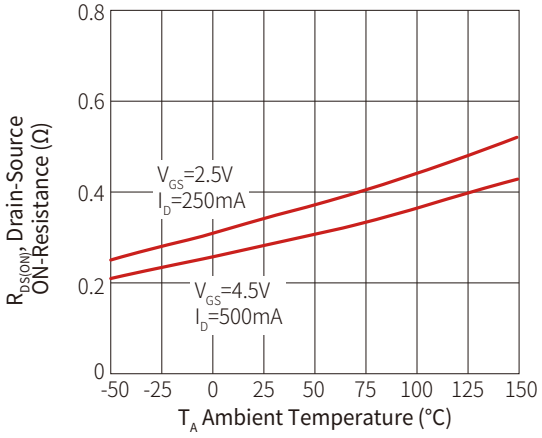


Figure 7: Gate Threshold Variation vs. Ambient Temperature

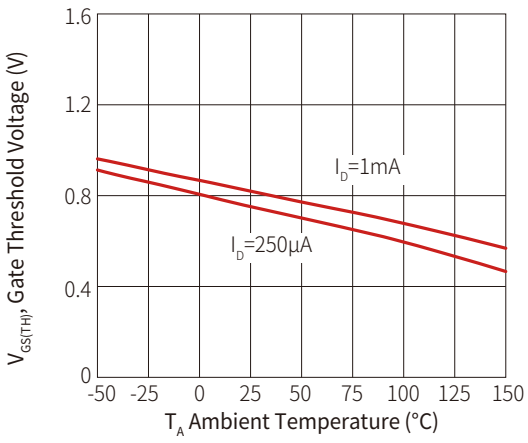


Figure 8: Diode Forward Voltage vs. Current

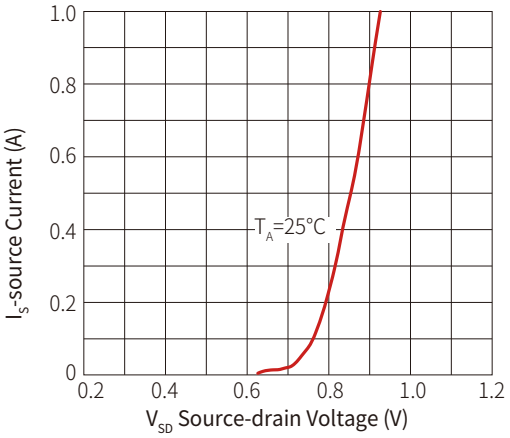


Figure 9: Typical Total Capacitance

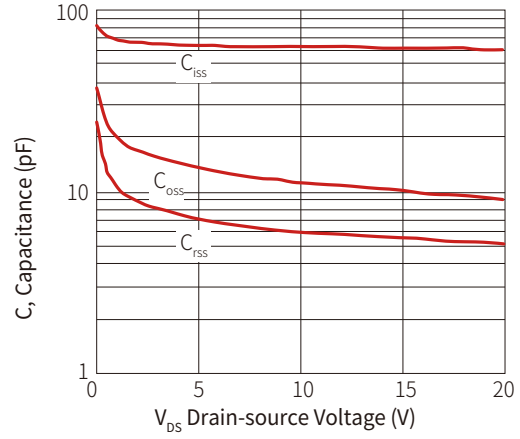
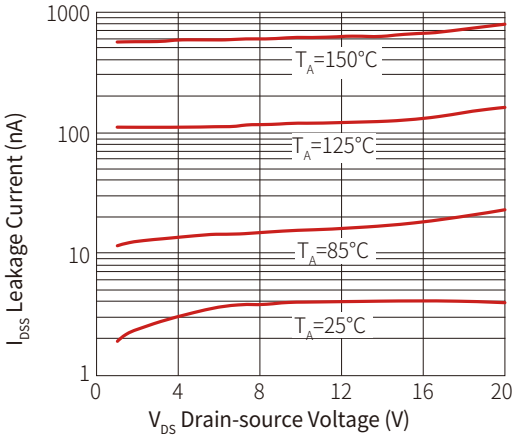


Figure 10: Typical Leakage Current vs. Drain-Source Voltage



P-Channel

Figure 1: Typical Output Characteristics

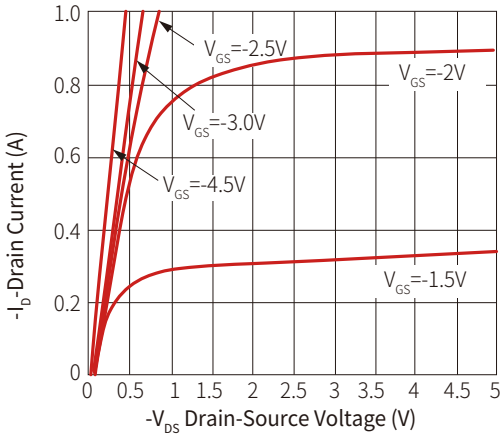


Figure 2: Typical Transfer Characteristic

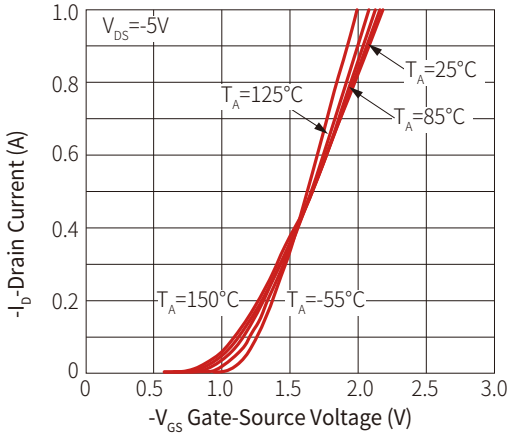


Figure 3: Typical On-Resistance vs. Drain Current and Gate Voltage

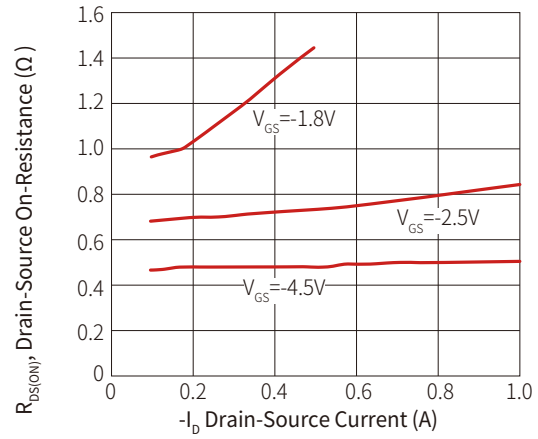


Figure 4: Typical On-Resistance vs. Drain Current and Temperature

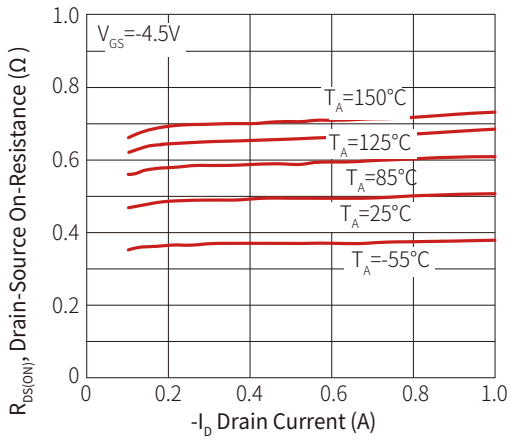


Figure 5: On-Resistance Variation with Temperature

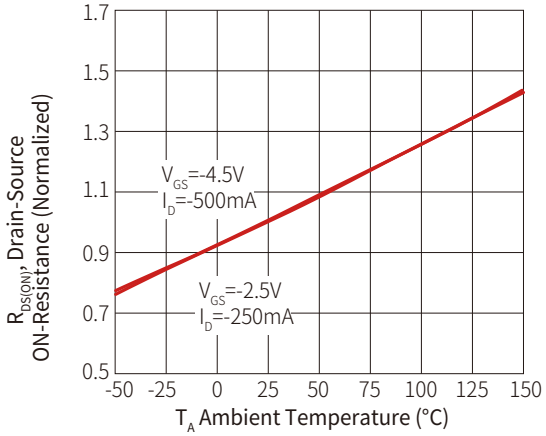


Figure 6: On-Resistance Variation with Temperature

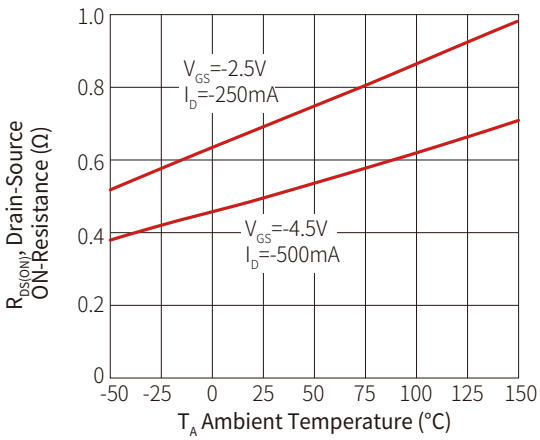


Figure 7：Gate Threshold Variation vs. Ambient Temperature

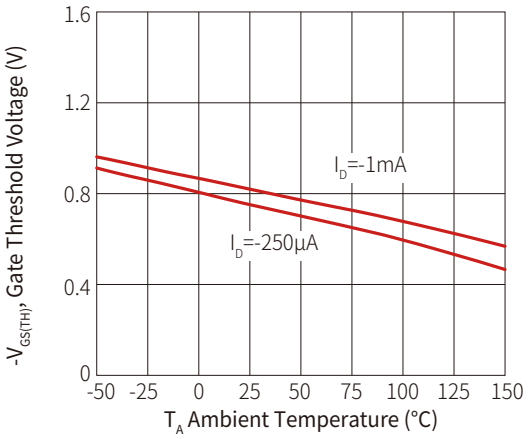


Figure 8：Diode Forward Voltage vs. Current

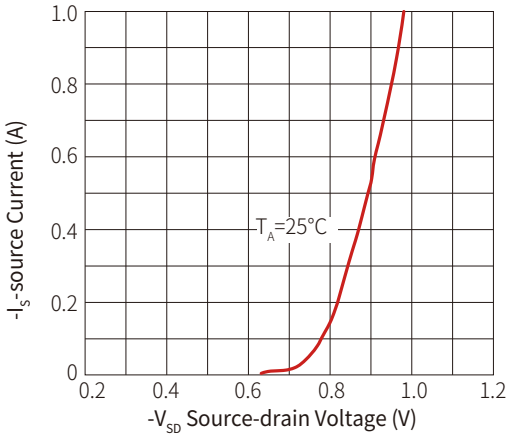


Figure 9：Typical Total Capacitance

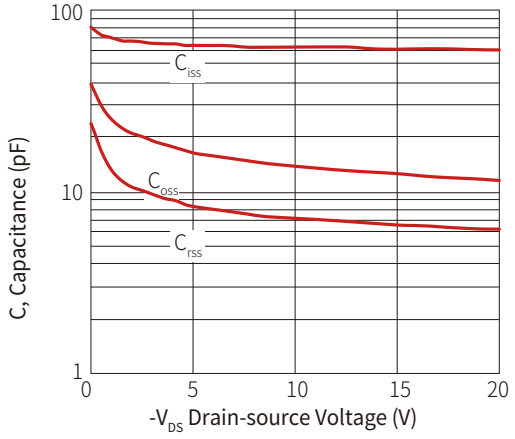
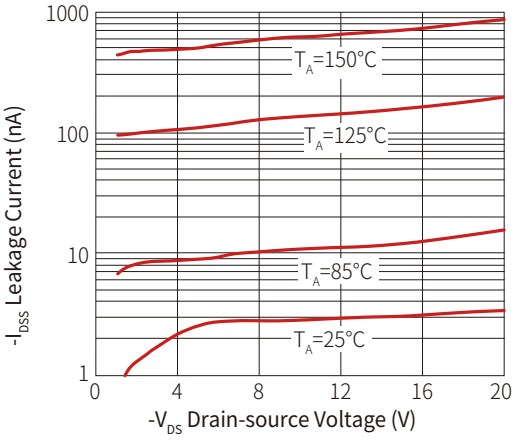
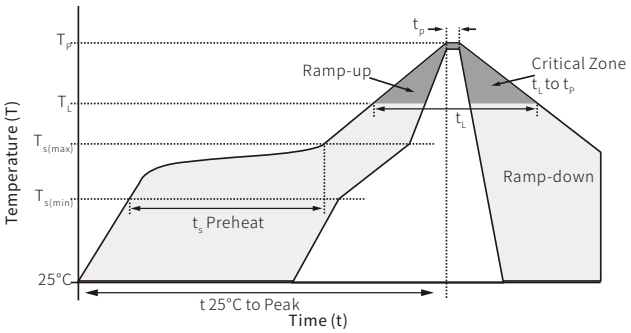


Figure 10：Typical Leakage Current vs. Drain-Source Voltage

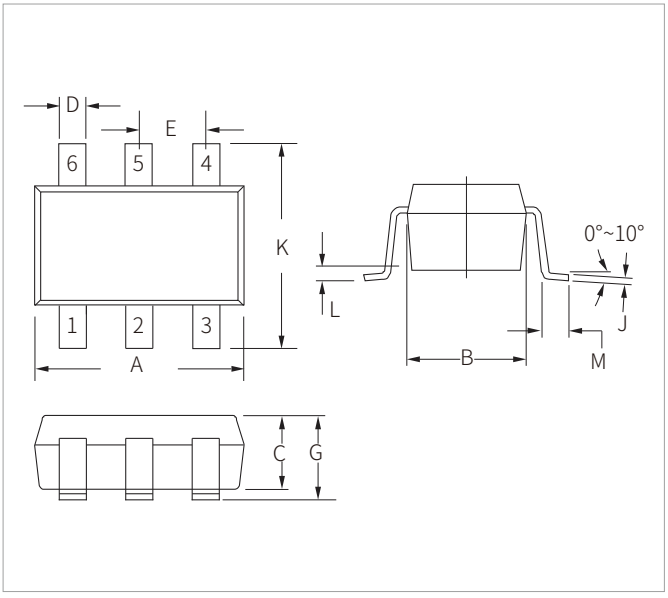


SOLDERING PARAMETERS

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes max.
Do not exceed		260°C

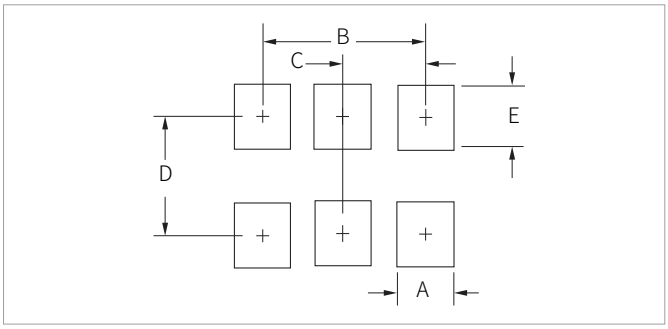


SOT-23-6L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.10	0.110	0.125
B	1.50	1.80	0.059	0.071
C	0.90	1.30	0.036	0.051
D	0.25	0.50	0.010	0.020
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.003	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
	Nominal	Nominal
A	0.70	0.028
B	1.90	0.074
C	0.95	0.037
D	2.40	0.094
E	1.00	0.039

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNPM2700CS	SOT-23-6L	3000PCS	7”

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