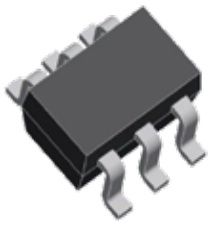
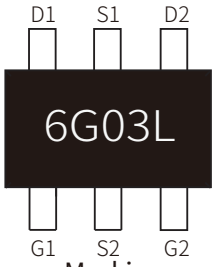
FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available



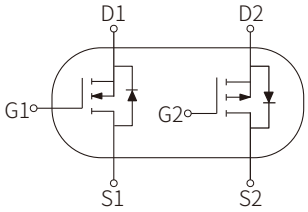
SOT-23-6L



Marking

APPLICATIONS

- Power management in half bridge and inverters
- DC-DC Converter
- Load Switch



Schematic Symbol

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS(T_a=25°C)

Parameter		Symbol	Value		Unit
			N-channel	P-channel	
Drain-Source Voltage		V_{DS}	30	-30	V
Continuous Drain Current	T_C=25°C	I_D	6.0	-6	A
	T_C=100°C		5	-4	A
Pulsed Drain Current		I_{DM}	20	-12	A
Gate-Source Voltage		V_{GS}	±20	±20	V
Power Dissipation		P_D	2.5	2.08	W
Single Pulse Avalanche Energy		E_{AS}	72	59	mJ
Avalanche Current		I_{AS}	21	-19	A
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	85		°C/W
Thermal Resistance Junction-Case		$R_{\theta JC}$	50		°C/W
Operating junction and storage temperature rang		T_J, T_{STG}	-55 to 150		°C

ELECTRICAL CHARACTERISTICS(T_a=25°C)

N-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	30			V
BVDSS Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C ,I_D=1mA		0.034		V/°C
Drain Leakage Curren	I_{DSS}	V_{DS}=30V,V_{GS}=0V,T_J=25°C			1	μA
		V_{DS}=30V,V_{GS}=0V,T_J=55°C			5	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	1.0	1.5	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA		-5.8		mV/°C
On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=6A		18	25	mΩ
		V_{GS}=4.5V,I_D=5A		25	31	
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,F=1.0MHz		370		pF
Output Capacitance	C_{oss}			54		
Reverse Transfer Capacitance	C_{rss}			40		
Turn–On Delay Time	$t_{d(on)}$	V_{DD}=12V,V_{GS}=10V R_G=3.3Ω,I_D=5A		3.9		ns
Turn–On Rise Time	t_r			9.2		
Turn–Off Delay Time	$t_{d(off)}$			14.5		
Turn–Off Fall Time	t_f			6.0		
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=20V,I_D=6A		7.2		nC
Gate Source Charge	Q_{gs}			1.4		
Gate Drain Charge	Q_{gd}			2.2		
Diode Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current			6	A
Pulsed Source Current	I_{SM}				20	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=5A,T_J=25°C			1.2	V
Guaranteed Avalanche Characteristics						
Single Pulse Avalanche Energy	E_{AS}	V_{DD}=25V, L=0.1mH , I_{AS}=10A	16			mJ

P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-30			V
Drain Leakage Curren	I_{DSS}	V_{DS}=-30V,V_{GS}=0V			-1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=-250μA	-1	-1.5	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-4.1A		36	60	mΩ
		V_{GS}=-4.5V,I_D=-3A		50	85	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1.0MHz		530		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			56		
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DS}=-15V,R_L=15Ω V_{GS}=-10V,R_{GEN}=2.5Ω		14		ns
Turn–On Rise Time	t_r			61		
Turn–Off Delay Time	$t_{d(off)}$			19		
Turn–Off Fall Time	t_f			10		
Total Gate Charge	Q_g	V_{GS}=-10V,V_{DS}=-15V,I_D=-4.1A		6.8		nC
Gate Source Charge	Q_{gs}			1.0		
Gate Drain Charge	Q_{gd}			1.4		
Source-Drain Body Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=-4.1A			-1.2	V
Continuous Source Current	I_S				-6.0	A

PARAMETER CHARACTERISTIC CURVE

N-Channel

Figure 1: Typical Output Characteristics

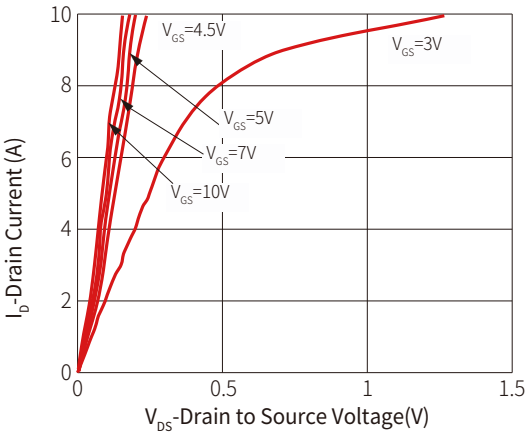


Figure 2: On-Resistance vs. G-S Voltage

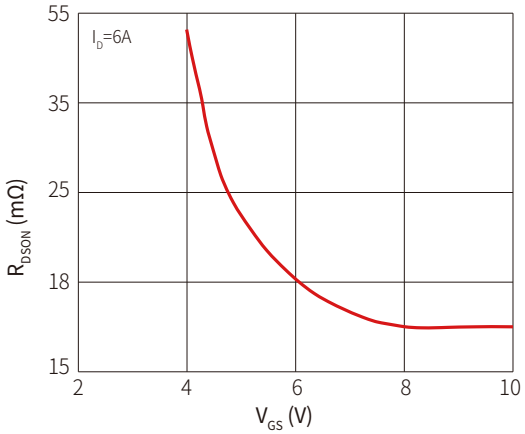


Figure 3: Forward Characteristics of Reverse

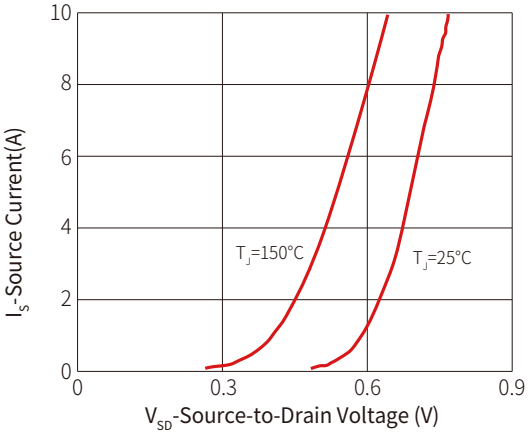


Figure 4: Gate-charge Characteristics

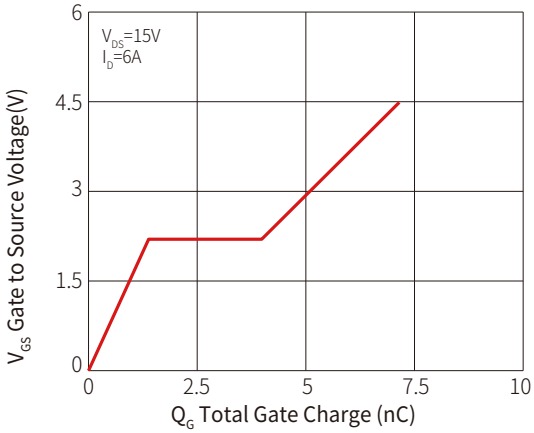


Figure 5:$V_{GS(th)}$ vs. T_J

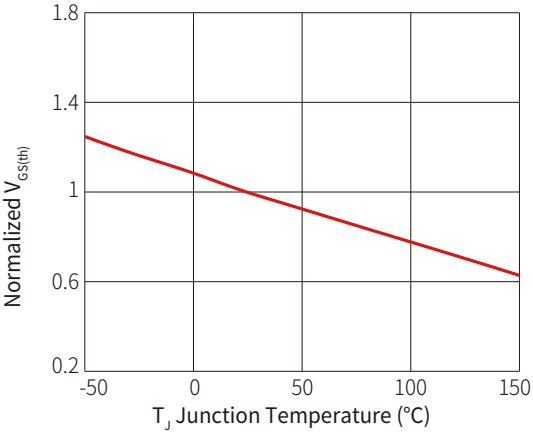


Figure 6:Normalized R_{DSON} vs. T_J

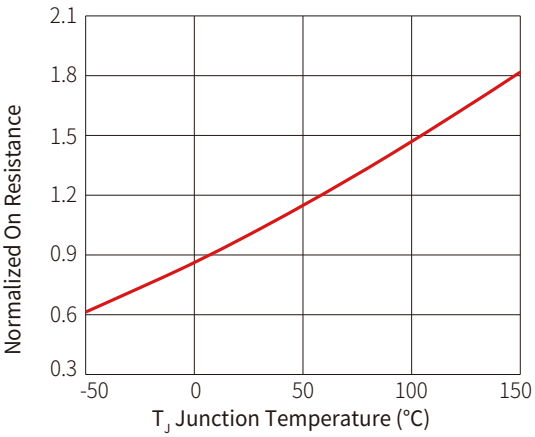


Figure 7: Capacitance

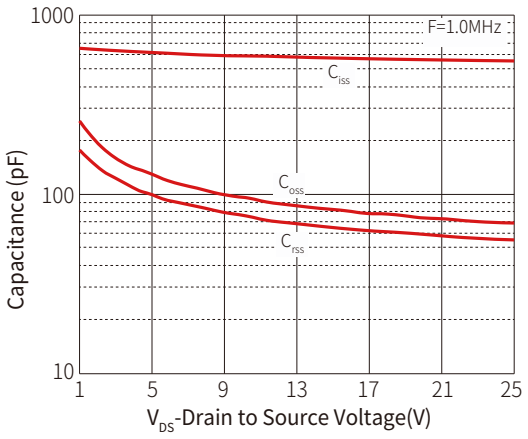


Figure 8: Safe Operating Area

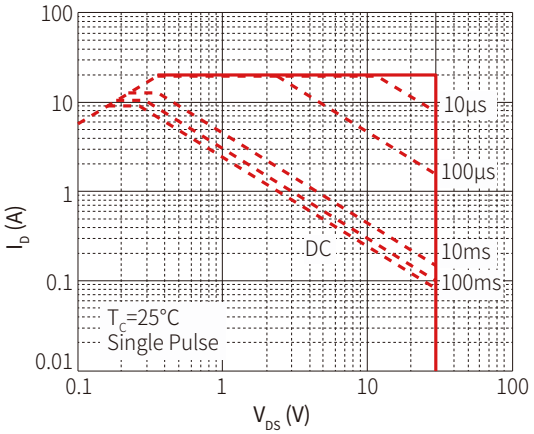
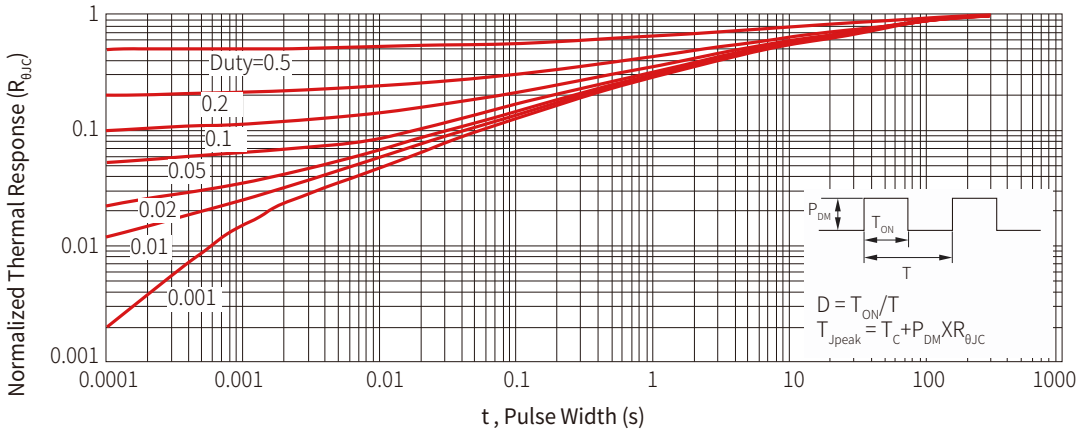


Figure 9: Normalized Maximum Transient Thermal Impedance



P-Channel

Figure 1: Typical Output Characteristics

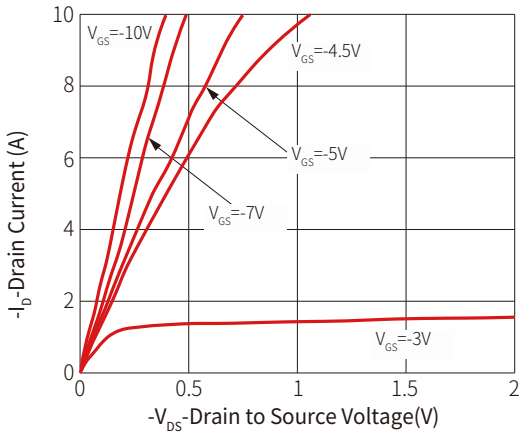


Figure 2: On-Resistance vs. G-S Voltage

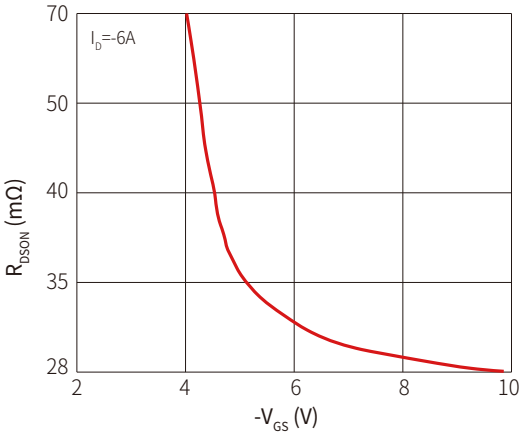


Figure 3: Forward Characteristics of Reverse

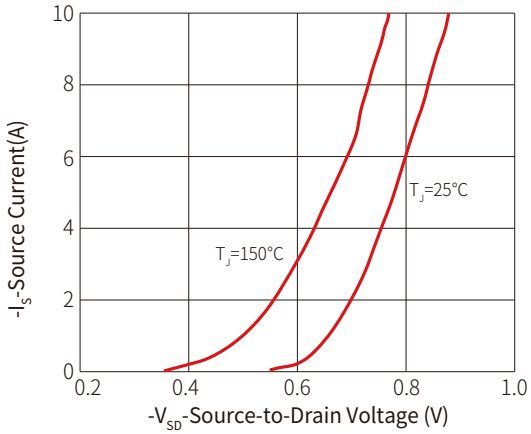


Figure 4: Gate-charge Characteristics

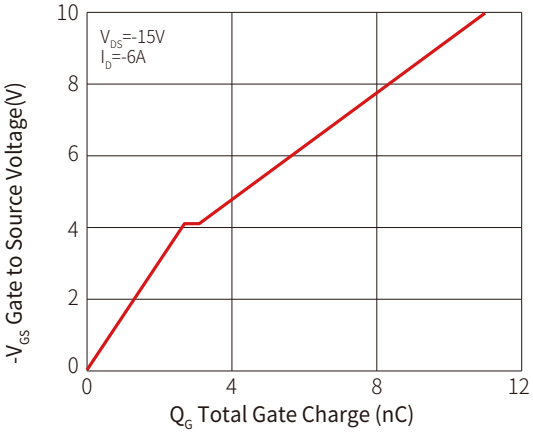


Figure 5:$V_{GS(th)}$ vs. T_J

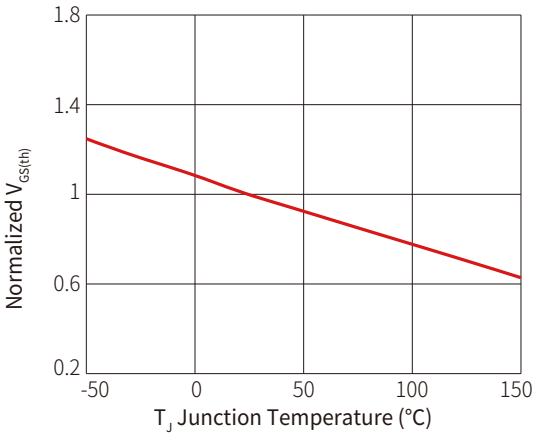


Figure 6:Normalized R_{DSON} vs. T_J

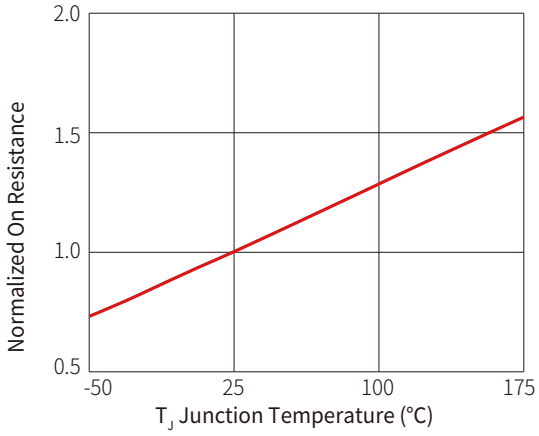
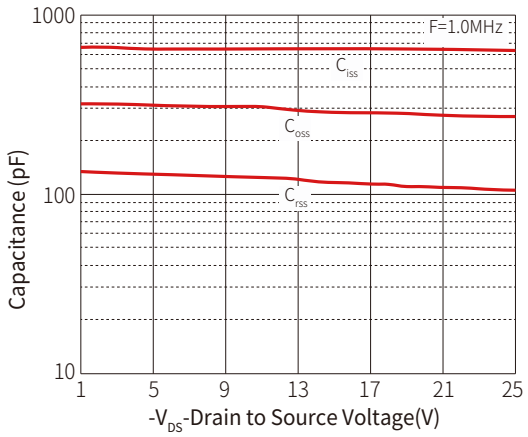


Figure 7: Capacitance



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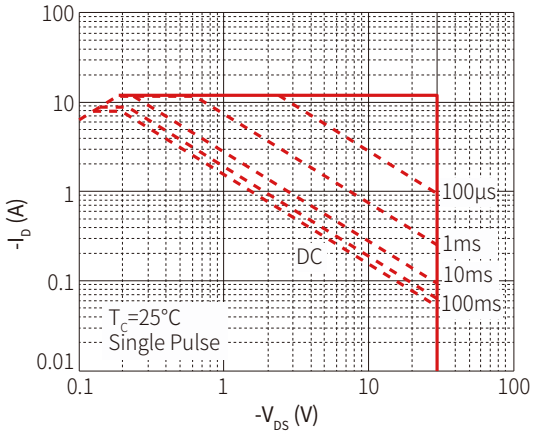

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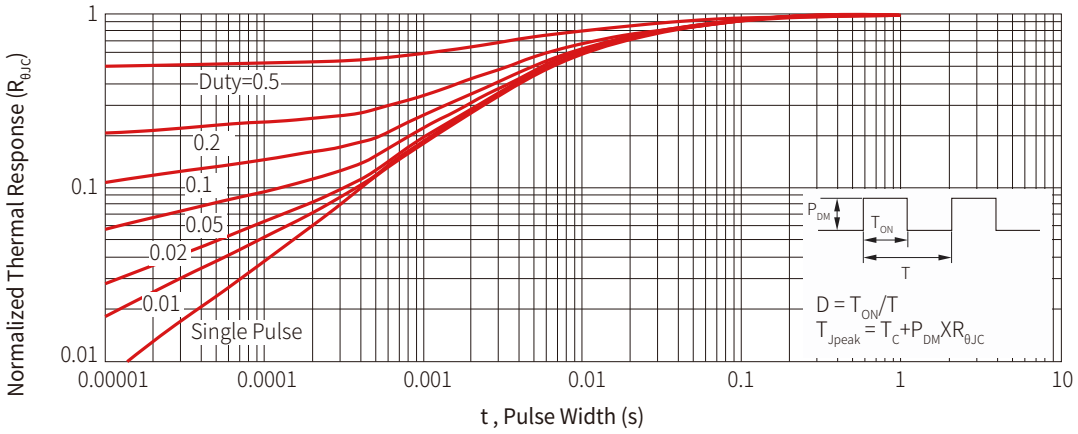
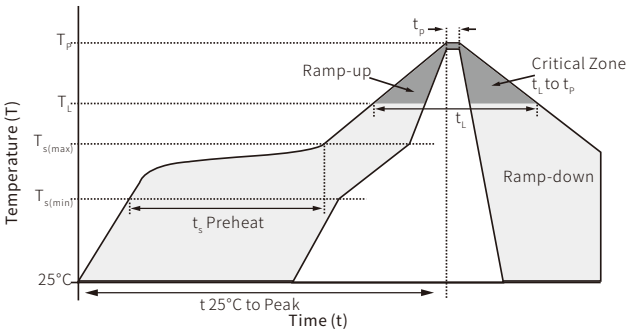
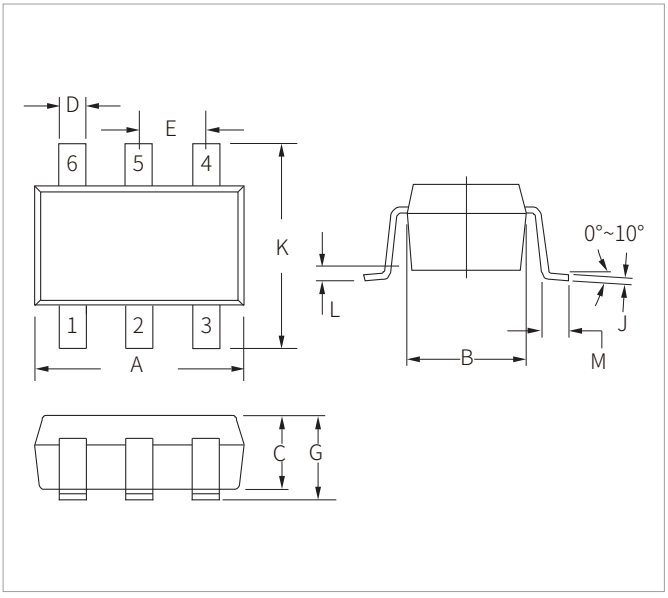


SOLDERING PARAMETERS

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

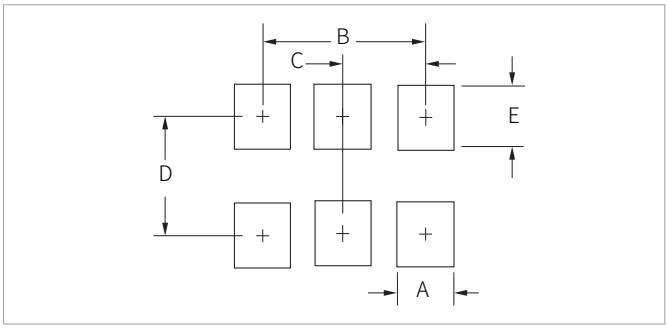


SOT-23-6L PACKAGE INFORMATION



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
SNPM6G03CS	SOT-23-6L	3000PCS	7”

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