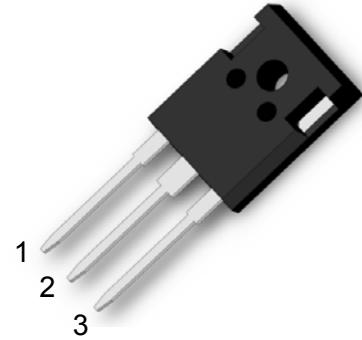


PRODUCT FEATURES

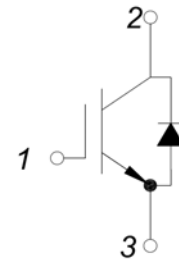
- IGBT chip in trench FS-technology
- Low switching losses
- $V_{CE(sat)}$ with positive temperature coefficient
- Fast switching and short tail current
- Free wheeling diodes with fast and soft reverse recovery
- Pb-free lead plating,RoHS compliant



APPLICATIONS

- High frequency switching application
- Medical applications
- Motion/servo control
- UPS systems

1.Gate
2.Collector
3.Emitter



Type	V_{CES}	I_C	$V_{CE(sat)}$ $T_J=25^\circ C$	T_{Jmax}	Marking	Package
MM25G3T120B	1200V	25A	1.8V	175°C	MM25G3T120B	TO-247

ABSOLUTE MAXIMUM RATINGS($T_C=25^\circ C$ unless otherwise specified)

Symbol	Parameter/Test Conditions	Values	Unit	
V_{CES}	Collector Emitter Voltage $T_J=25^\circ C$	1200	V	
V_{GES}	Gate Emitter Voltage	± 20		
	Transient Gate Emitter Voltage ($t_p \leq 10\mu s, D < 0.01$)	± 30		
I_C	DC Collector Current	$T_C=25^\circ C$	40	A
		$T_C=110^\circ C$	25	
I_{Cpuls}	Pulsed collector current, t_p limited by T_{Jmax}	100		
P_{tot}	Power Dissipation Per IGBT	385	W	
V_{RRM}	Repetitive Reverse Voltage $T_J=25^\circ C$	1200	V	
$I_{F(AV)}$	Average Forward Current $T_C=100^\circ C$	20	A	
I_{Fpuls}	Diode pulsed current, t_p limited by T_{Jmax}	100		
T_{Jmax}	Max. Junction Temperature	175	°C	
T_{Jop}	Operating Temperature	-40~175		
T_{stg}	Storage Temperature	-55~150		
	Soldering temperature, 1.6mm from case for 10s Wavesoldering only, temperature on leads only	260		
Torque	to heatsink Recommended (M3)	1.1	Nm	

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MM25G3T120B

IGBT

ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit	
$V_{GE(th)}$	Gate Emitter Threshold Voltage	$V_{CE}=V_{GE}, I_C=1\text{mA}$	5.0	5.8	6.5	V	
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	$I_C=25\text{A}, V_{GE}=15\text{V}, T_J=25^\circ\text{C}$		1.8	2.25		
		$I_C=25\text{A}, V_{GE}=15\text{V}, T_J=125^\circ\text{C}$		2.1			
		$I_C=25\text{A}, V_{GE}=15\text{V}, T_J=150^\circ\text{C}$		2.2			
I_{CES}	Collector Leakage Current	$V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_J=25^\circ\text{C}$			100	μA	
		$V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_J=150^\circ\text{C}$			10	mA	
I_{GES}	Gate Leakage Current	$V_{CE}=0\text{V}, V_{GE}=\pm 20\text{V}, T_J=25^\circ\text{C}$	-400		400	nA	
Q_g	Gate Charge	$V_{CE}=600\text{V}, I_C=25\text{A}, V_{GE}=15\text{V}$		150		nC	
C_{ies}	Input Capacitance	$V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$		1.9		nF	
C_{res}	Reverse Transfer Capacitance				85	pF	
$t_{d(on)}$	Turn on Delay Time	$V_{CC}=600\text{V}, I_C=25\text{A}$ $R_G=30\Omega,$ $V_{GE}=\pm 15\text{V},$ Inductive Load	$T_J=25^\circ\text{C}$		35	ns	
			$T_J=125^\circ\text{C}$		40	ns	
			$T_J=150^\circ\text{C}$		45	ns	
t_r	Rise Time		$T_J=25^\circ\text{C}$		35	ns	
			$T_J=125^\circ\text{C}$		40	ns	
			$T_J=150^\circ\text{C}$		40	ns	
$t_{d(off)}$	Turn off Delay Time	$T_J=25^\circ\text{C}$		210	ns		
		$T_J=125^\circ\text{C}$		250	ns		
		$T_J=150^\circ\text{C}$		270	ns		
t_f	Fall Time	$T_J=25^\circ\text{C}$		100	ns		
		$T_J=125^\circ\text{C}$		150	ns		
		$T_J=150^\circ\text{C}$		180	ns		
E_{on}	Turn on Energy	$V_{CC}=600\text{V}, I_C=25\text{A}$ $R_G=30\Omega,$ $V_{GE}=\pm 15\text{V},$ Inductive Load	$T_J=125^\circ\text{C}$		3.4	mJ	
			$T_J=150^\circ\text{C}$		3.6	mJ	
E_{off}	Turn off Energy		$T_J=125^\circ\text{C}$		2.4	mJ	
			$T_J=150^\circ\text{C}$		2.55	mJ	
I_{SC}	Short Circuit Current		$t_{psc} \leq 10\mu\text{s}, V_{GE}=15\text{V}$ $T_J=125^\circ\text{C}, V_{CC}=600\text{V}$		100		A
R_{thJC}	Junction to Case Thermal Resistance (Per IGBT)				0.39	K/W	

Anti-Parallel Diode

ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=20\text{A}, V_{GE}=0\text{V}, T_J=25^\circ\text{C}$		1.75	2.15	V
		$I_F=20\text{A}, V_{GE}=0\text{V}, T_J=125^\circ\text{C}$		1.6		
		$I_F=20\text{A}, V_{GE}=0\text{V}, T_J=150^\circ\text{C}$		1.55		
t_{rr}	Reverse Recovery Time	$I_F=20\text{A}, V_R=600\text{V}$ $di_F/dt=-500\text{A}/\mu\text{s}$ $T_J=150^\circ\text{C}$		450		ns
I_{RRM}	Max. Reverse Recovery Current			21		A
Q_{RR}	Reverse Recovery Charge			4.6		μC
E_{rec}	Reverse Recovery Energy			1.35		mJ
R_{thJCD}	Junction to Case Thermal Resistance (Per Diode)				1.0	K/W

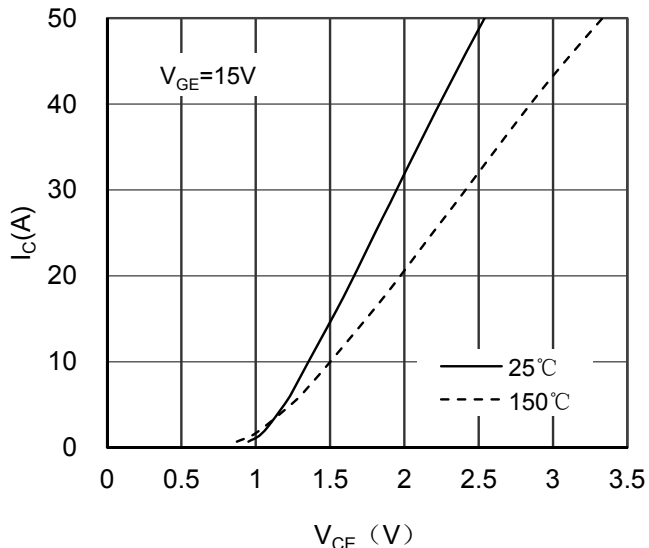


Figure 1. Typical Output Characteristics IGBT

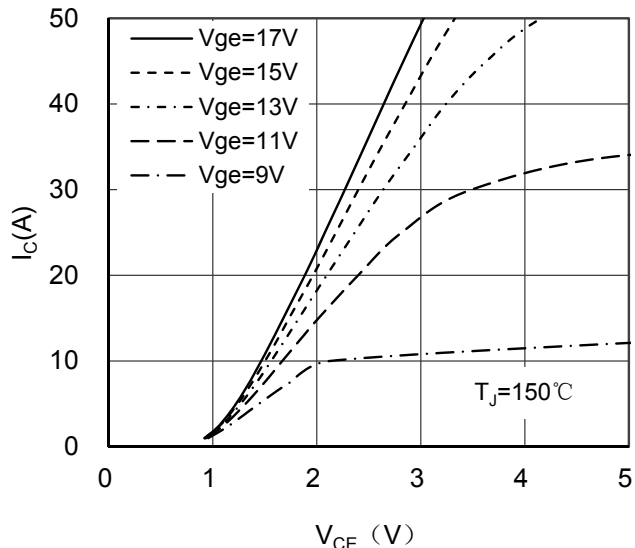


Figure 2. Typical Output Characteristics IGBT

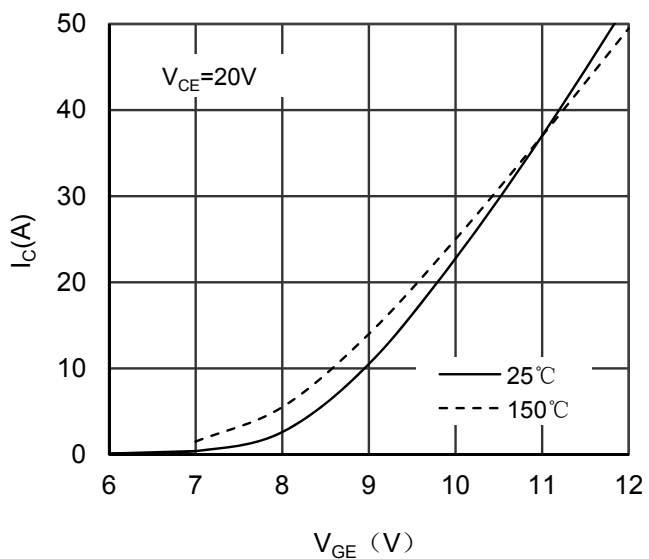


Figure 3. Typical Transfer characteristics IGBT

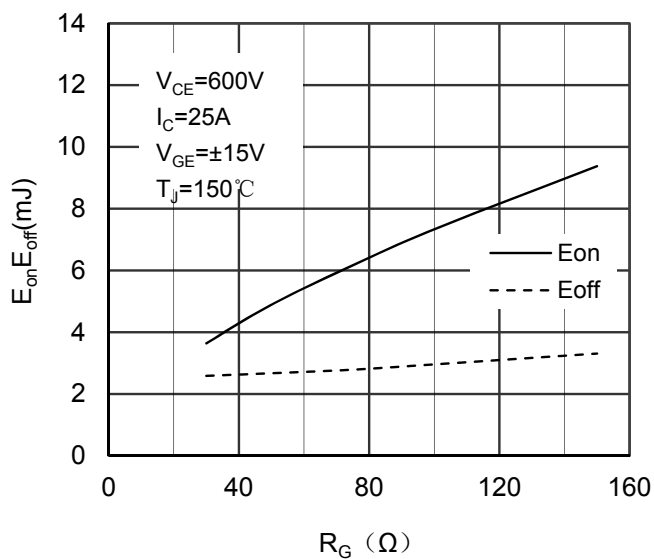


Figure 4. Switching Energy vs Gate Resistor IGBT

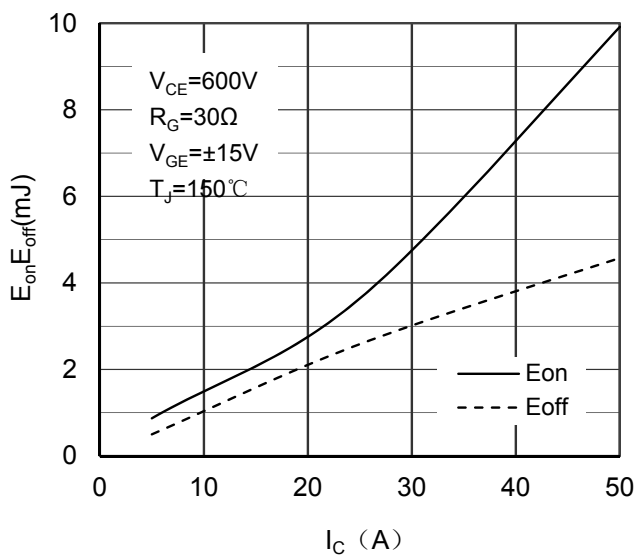


Figure 5. Switching Energy vs Collector Current IGBT

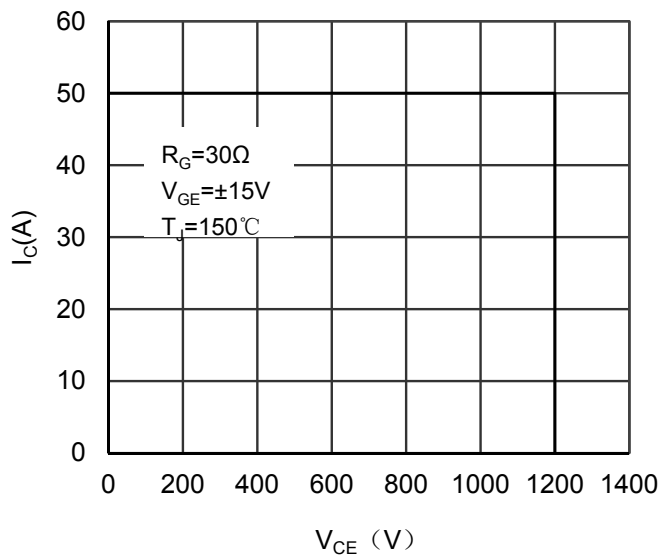


Figure 6. Reverse Biased Safe Operating Area IGBT

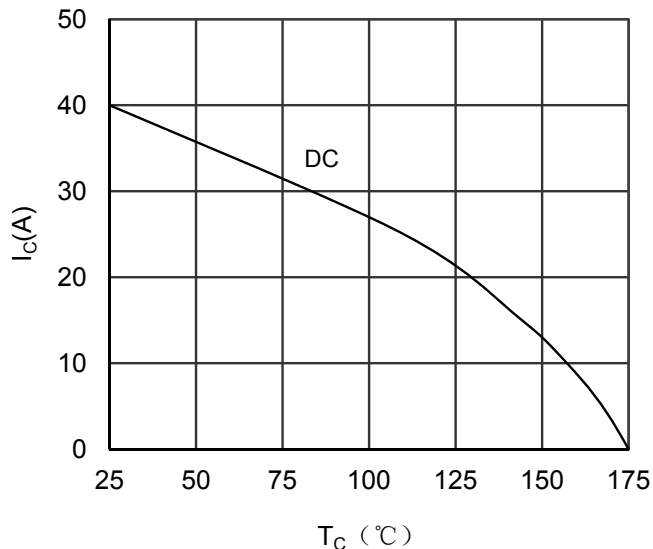


Figure 7. Collector Current vs Case temperature IGBT

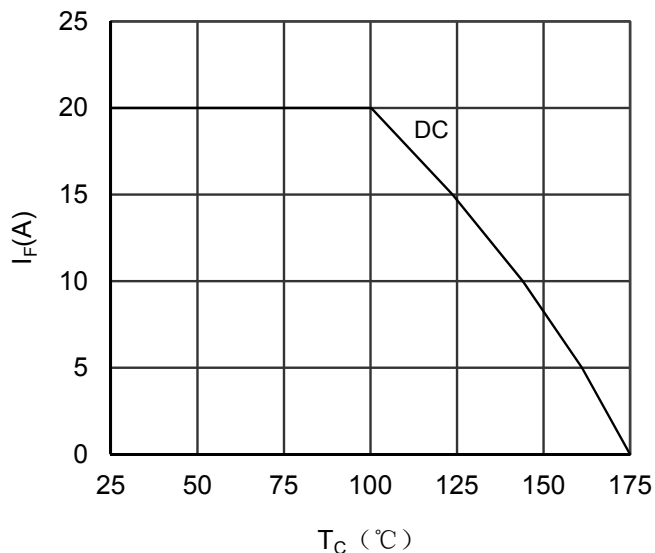


Figure 8. Forward current vs Case temperature Diode

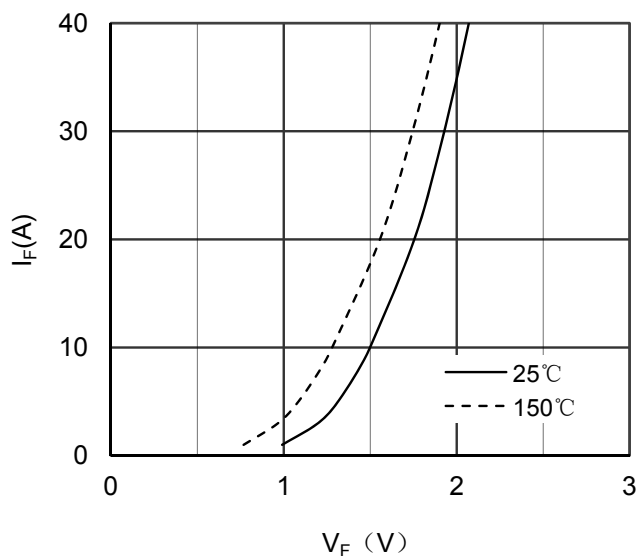


Figure 9. Diode Forward Characteristics Diode

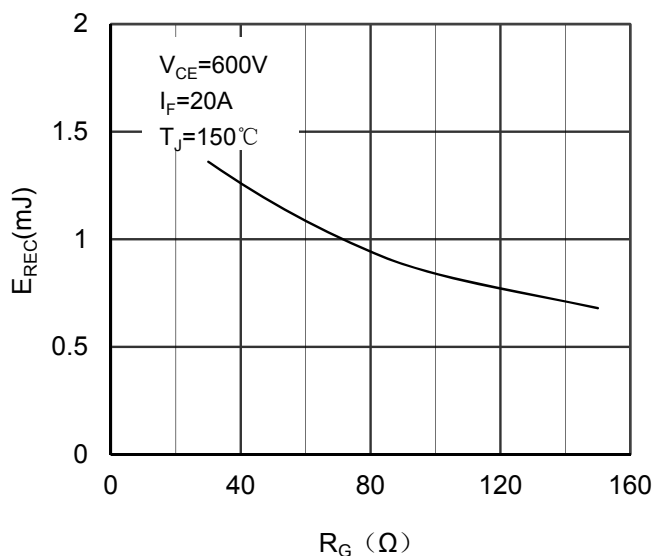


Figure 10. Switching Energy vs Gate Resistor Diode

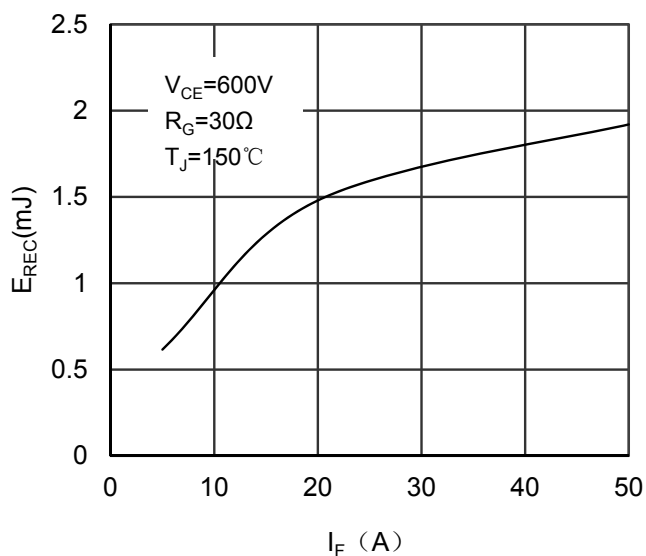


Figure 11. Switching Energy vs Forward Current Diode

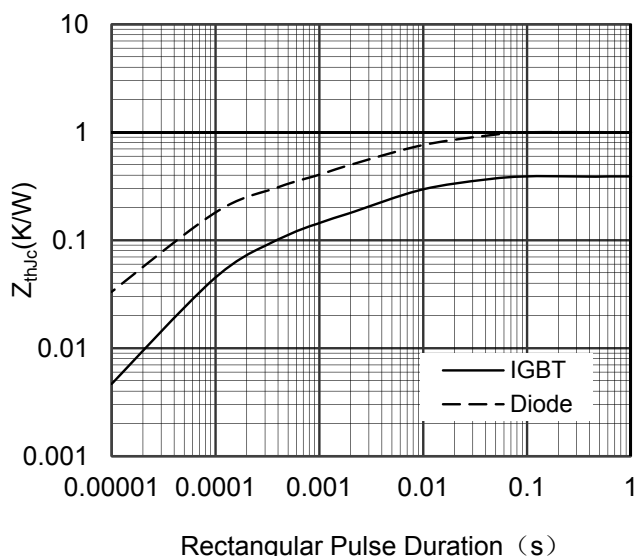
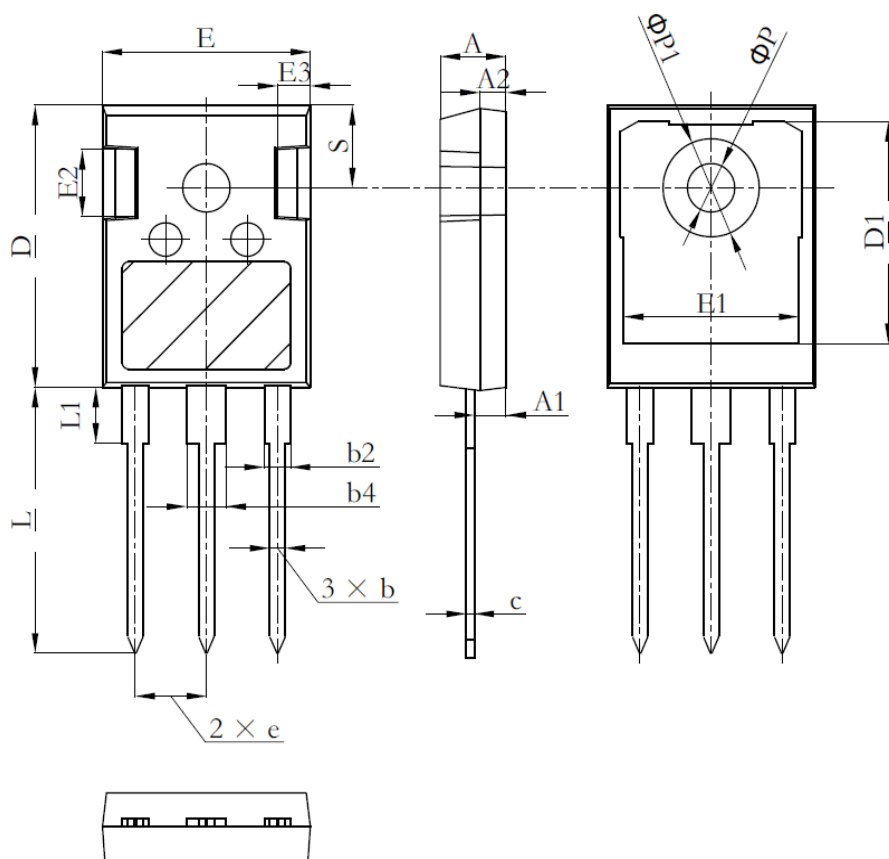


Figure 12. Transient Thermal Impedance of Diode and IGBT



Symbol	Min	Nom	Max
A	4.80	5.00	5.21
A1	2.21	2.41	2.61
A2	1.85	2.00	2.16
b	1.07	1.23	1.36
b2	1.90	2.05	2.41
b4	2.87	3.05	3.38
c	0.50	0.60	0.75
e	5.44BSC		
E	15.50	15.80	16.13
E1	12.38	13.30	13.60
E2	3.68	-	5.20
E3	1.00	-	2.70
D	20.70	21.00	21.30
D1	16.25	-	17.65
L	19.60	19.91	20.32
L1	-	-	4.40
ΦP	3.40	3.60	3.80
ΦP1	-	-	7.30
S	6.15BSC		

技术要求:

1. 单位: mm
2. 成品需符合RoHS2.0要求.

Figure 14. Package Outline