

描述 / Descriptions

TO-252 塑封封装 SiC N 沟道 MOS 场效应管。

SiC N-CHANNEL MOSFET in a TO-252 Plastic Package.

特征 / Features

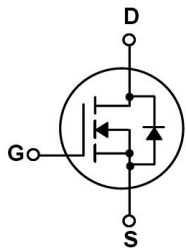
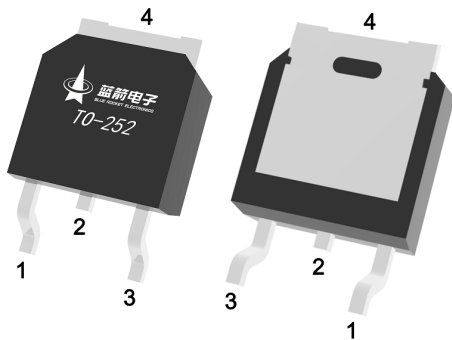
$V_{DS}=650V$; $I_D=6.9A$

$R_{DS(on)}@15V \leq 1300m\Omega$ (Type.1000m Ω)

用途 / Applications

开关电源、高压 DC/DC 转换器、电池充电器、电机驱动、脉冲功率应用。

Switch Mode Power Supplies, High Voltage DC/DC Converters, Battery Chargers, Motor Drives, Pulsed Power Applications.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1 : G

PIN 2 : D

PIN 3 : S

PIN 4 : D

印章代码 / Marking

见印章说明。

See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Tc=25°C)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DSS}	650	V
Drain Current($V_{GS}=15V$)	$I_D(T_c=25^{\circ}C)$	6.9	A
	$I_D(T_c=100^{\circ}C)$	4.9	A
Drain Current - Pulsed($V_{GS}=15V$)	I_{DM}	13.8	A
Gate-Source Voltage	V_{GS}	-10/+22	V
Recommended Operation Voltage of Gate to Source	V_{GSop}	0/+15	V
Power Dissipation	$P_D(T_j=175^{\circ}C)$	48.4	W
Avalanche Energy, Single Pulse(L=10mH)	E_{AS}	5	mJ
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C
Junction-to-Case	$R_{\theta JC}$	3.1	°C/W

电性能参数 / Electrical Characteristics(Tc=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=500\mu A$	650			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V$ $V_{GS}=0V$			10	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=18V$ $V_{DS}=0V$			250	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=0.65mA$	2.6		4.6	V
Total gate charge	$R_{DS(on)}$	$V_{GS}=15V$ $I_D=1.8A$		1000	1300	m Ω
		$V_{GS}=15V$ $I_D=1.8A$ $T_J=175^{\circ}C$		820		
		$V_{GS}=18V$ $I_D=1.8A$		680		
		$V_{GS}=18V$ $I_D=1.8A$ $T_J=175^{\circ}C$		670		
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.1A$		3.5		V
Continuous Diode Forward Current	I_S	$V_{GS}=0V$		6.9		A
Reverse Recovery Time	t_{rr}	$V_{GS}=0V$, $I_{SD}=2A$,		11.6		ns
Reverse Recovery Charge	Q_{rr}	$V_R=400V$, $T_J=25^{\circ}C$		18.6		nC
Peak Reverse Recovery Current	I_{rrm}	$di/dt=465A/\mu s$,		2.8		A
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0/15V$ $V_{DD}=400V$ $I_D=2A$ $R_g=5\Omega$		10.2		ns
Turn-On Rise Time	t_r			36.5		
Turn-Off Delay Time	$t_{d(off)}$			14.2		
Turn-Off Fall Time	t_f			35.6		

电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Gate resistance	R_g	$V_{AC}=25mV$ $f=1MHz$		11.8		Ω
Input Capacitance	C_{iss}	$V_{DS}=400V$ $V_{GS}=0V$ $f=100kHz$		125		pF
Output Capacitance	C_{oss}			11		
Reverse Transfer Capacitance	C_{rss}			1		
Total Gate Charge	Q_g	$V_{GS}=0/15V$, $V_{DS}=400V$, $I_D=2A$		16.5		nC
Gate Source Charge	Q_{gs}			6.5		
Gate Drain Charge	Q_{gd}			11.8		

电参数曲线图 / Electrical Characteristic Curve

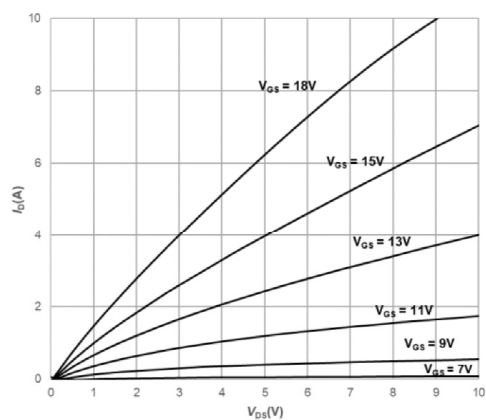
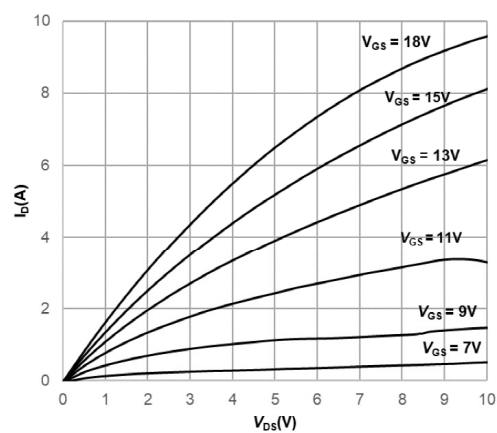
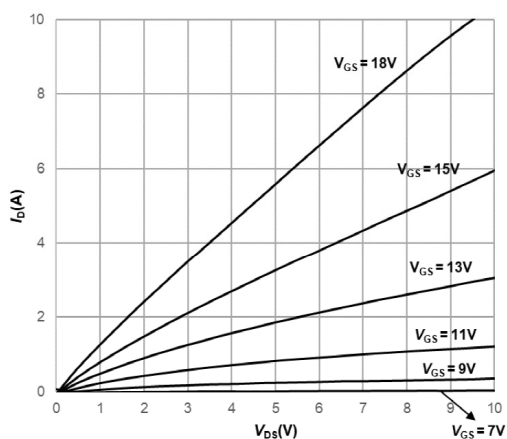
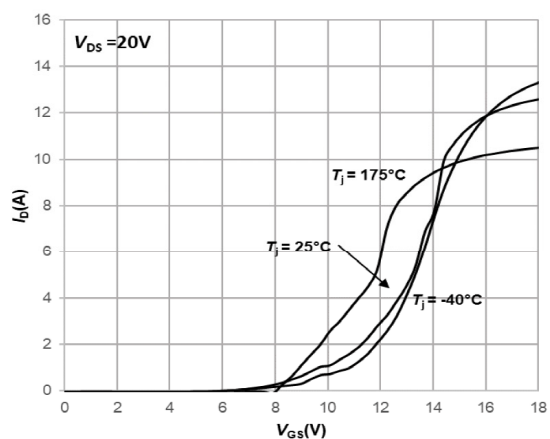
Fig1. Output Characteristics $T_j = 25^\circ\text{C}$ Fig2. Output Characteristics $T_j = 175^\circ\text{C}$ Fig3. Output Characteristics $T_j = -40^\circ\text{C}$ 

Fig4. Typical Transfer Characteristics

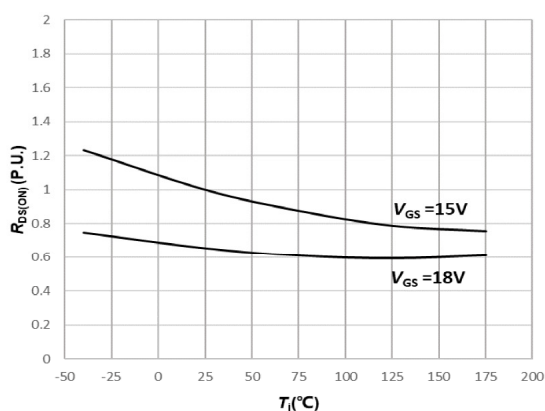
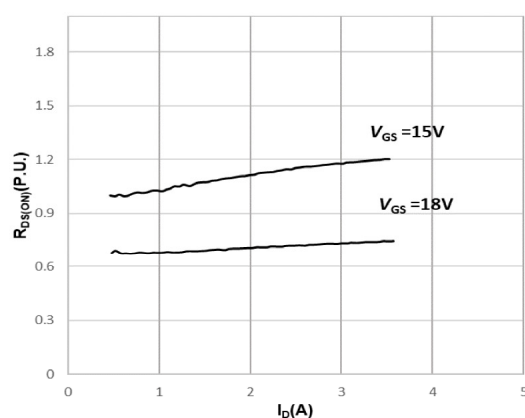


Fig5. Normalized On-Resistance vs. Temperature

Fig6. Normalized On-Resistance vs. Drain Current For $T_j = 25^\circ\text{C}$

电参数曲线图 / Electrical Characteristic Curve

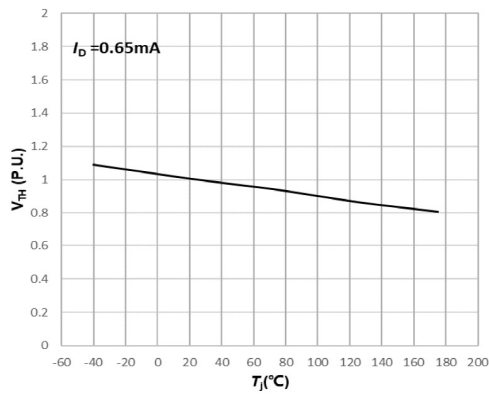


Fig7. Normalized Threshold Voltage vs. Temperature

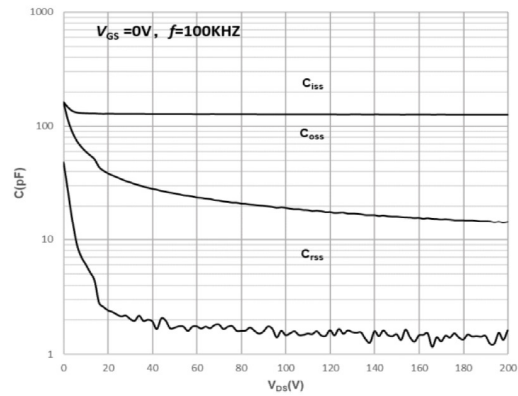


Fig8. Capacitances vs. Drain-Source Voltage (0-200V)

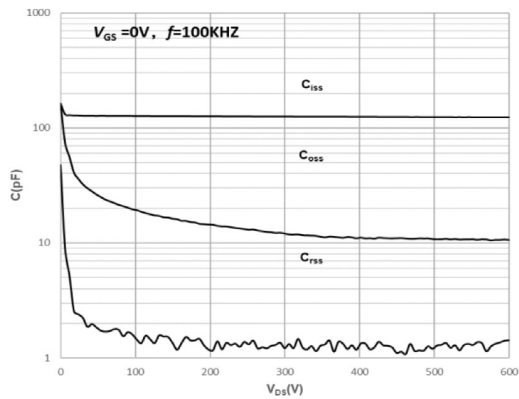


Fig9. Capacitances vs. Drain-Source Voltage (0-600V)

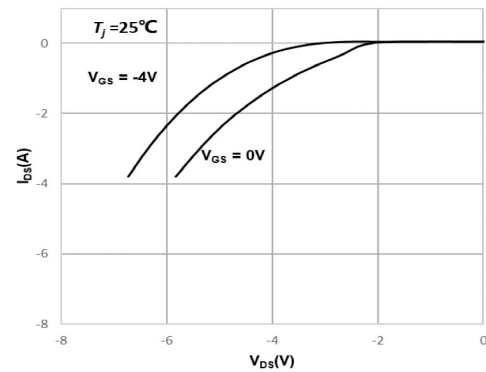


Fig10. Body Diode Characteristics

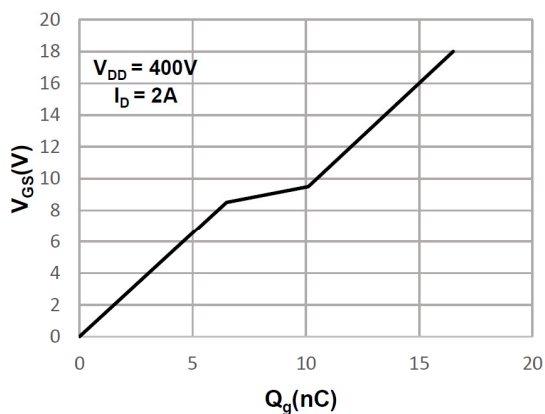


Fig11. Gate Charge Characteristic

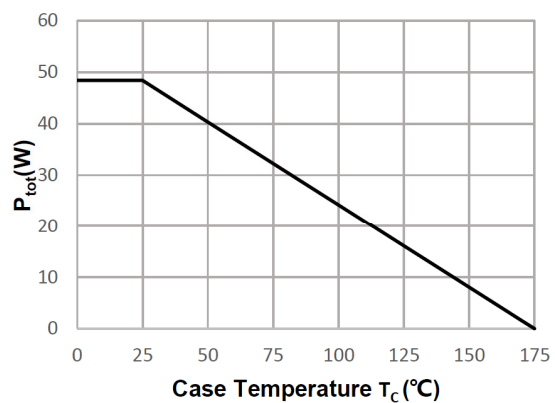


Fig12. Power Dissipation vs. Case temperature

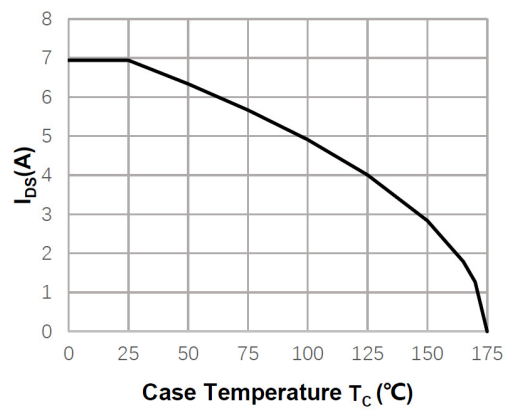
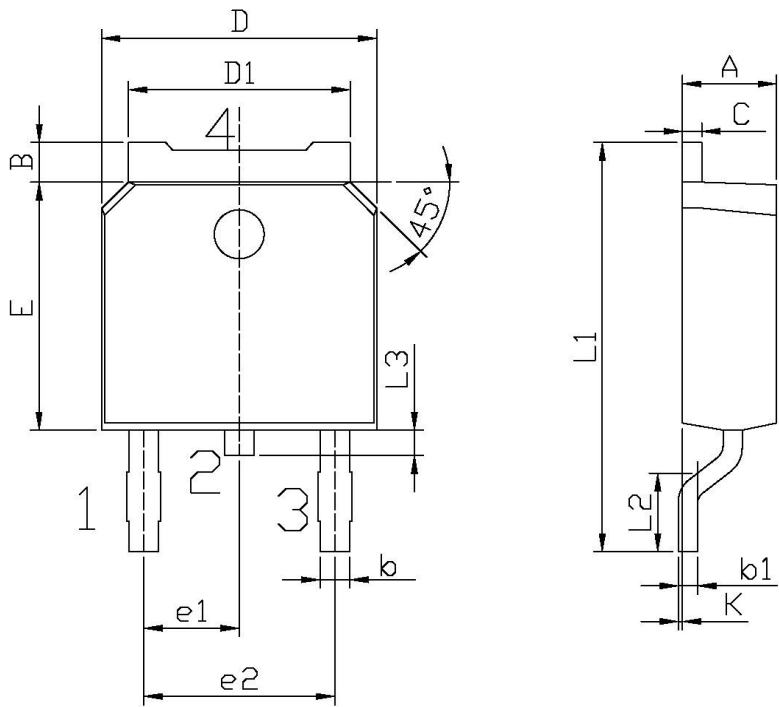
电参数曲线图 / Electrical Characteristic Curve

Fig13. Continuous Drain Current vs. Case Temperature

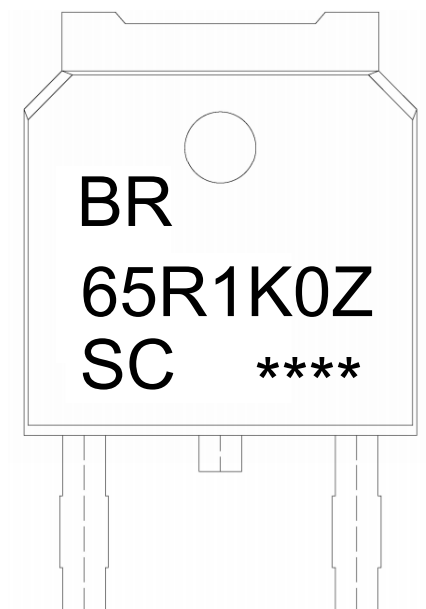
外形尺寸图 / Package Dimensions



单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

T0-252

印章说明 / Marking Instructions

说明：

BR： 为公司代码

65R1K0Z： 为型号代码

SC： 为碳化硅

****： 为生产批号代码，随生产批号变化

Note:

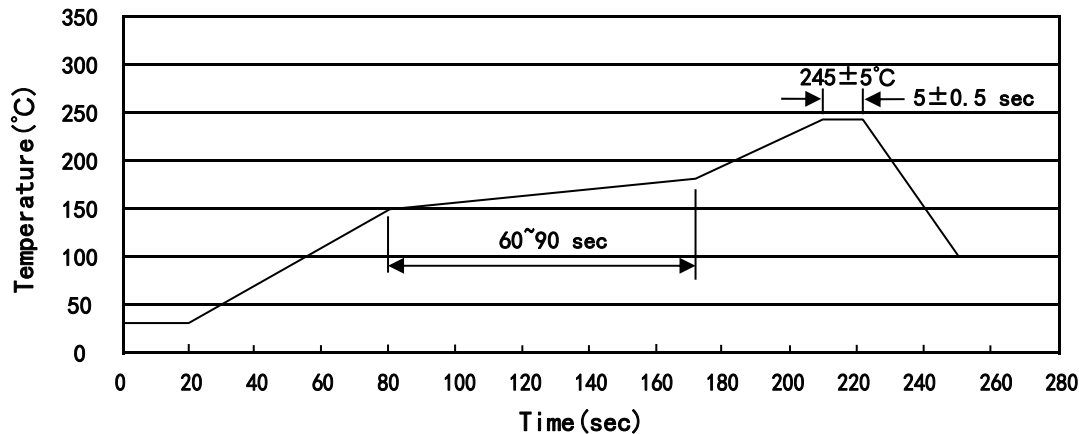
BR: Company Code

65R1K0Z: Product Type Code

SC: SiC

****: Lot No. Code, code change with Lot No.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 150~180°C，时间 60~90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

使用说明 / Notices

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