

# BRSC65R380ZDP

Rev.A Jan.-2026

## 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.

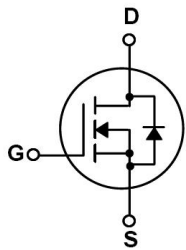
## 特征 / Features

$V_{DS}=650V$  ;  $I_D=11A$   
 $R_{DS(on)}@15V \leq 500m\Omega$  (Type.380m $\Omega$ )

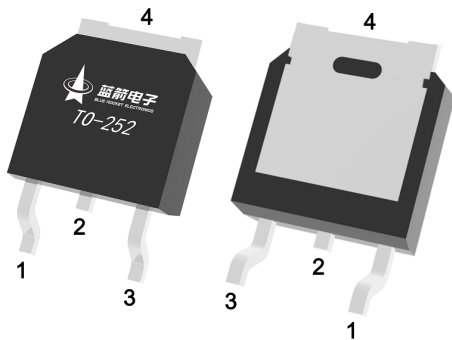
## 用途 / Applications

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



PIN 1 : 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 <sub>DSS</sub>	650	V
Drain Current	I <sub>D</sub> (Tc=25°C)	11	A
	I <sub>D</sub> (Tc=175°C)	9	A
Drain Current - Pulsed	I <sub>DM</sub>	22	A
Gate-Source Voltage	V <sub>GS</sub>	-10/+22	V
Recommended Operation Voltage of Gate to Source	V <sub>GSop</sub>	0/+18	V
Power Dissipation	P <sub>D</sub> (Tc=25°C)	52	W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 175	°C
Junction-to-Case	R <sub>θJC</sub>	2.88	°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 <sub>DSS</sub>	V <sub>GS</sub> =0V I <sub>D</sub> =500μA	650			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =650V V <sub>GS</sub> =0V			10	μA
Gate-Body Leakage Current Forward	I <sub>GSS</sub>	V <sub>GS</sub> =18V V <sub>DS</sub> =0V			250	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =1.8mA	2.7		4.5	V
Total gate charge	R <sub>DS(on)</sub>	V <sub>GS</sub> =15V I <sub>D</sub> =4A		350		mΩ
		V <sub>GS</sub> =15V I <sub>D</sub> =5A		380	500	
		V <sub>GS</sub> =15V I <sub>D</sub> =5A T <sub>J</sub> =175°C		325		
		V <sub>GS</sub> =18V I <sub>D</sub> =5A		260		
		V <sub>GS</sub> =18V I <sub>D</sub> =5A T <sub>J</sub> =175°C		270		
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V I <sub>S</sub> =3A		3.5		V
Continuous Diode Forward Current	I <sub>S</sub>	V <sub>GS</sub> =0V		11		A
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> = 0V, I <sub>SD</sub> =5A, V <sub>R</sub> =500V, di/dt=530A/us, T <sub>J</sub> =25°C		17.8		ns
Reverse Recovery Charge	Q <sub>rr</sub>			33.7		nC
Peak Reverse Recovery Current	I <sub>rrm</sub>			3.5		A

## 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
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0/15V$ $V_{DD}=500V$ $I_D=5A$ $R_g=10\ \Omega$		24		ns
Turn-On Rise Time	$t_r$			42		
Turn-Off Delay Time	$t_{d(off)}$			26.8		
Turn-Off Fall Time	$t_f$			76		
Gate resistance	$R_g$	$V_{AC}=25mV$ $f=1MHz$		14.3		$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=500V$ $V_{GS}=0V$ $f=1MHz$		254		pF
Output Capacitance	$C_{oss}$			20.2		
Reverse Transfer Capacitance	$C_{rss}$			2.4		
Total Gate Charge	$Q_g$	$V_{GS}=0/15V,$ $V_{DS}=500V,$ $I_D=5A$		21.3		nC
Gate Source Charge	$Q_{gs}$			6.7		
Gate Drain Charge	$Q_{gd}$			11.5		

电参数曲线图 / Electrical Characteristic Curve

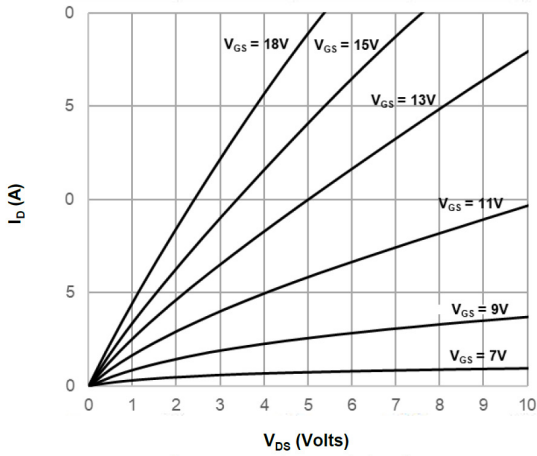


Fig1. Output Characteristics Tj=25°C

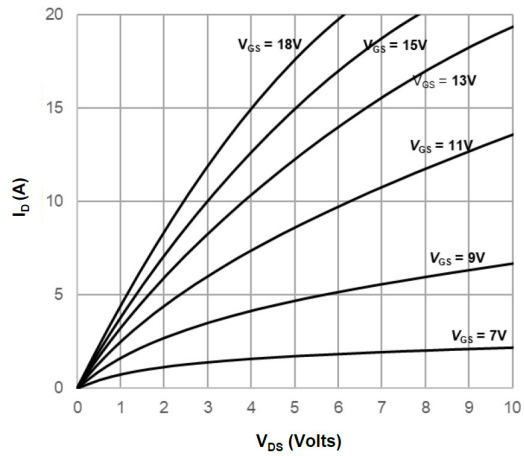


Fig2. Output Characteristics Tj=175°C

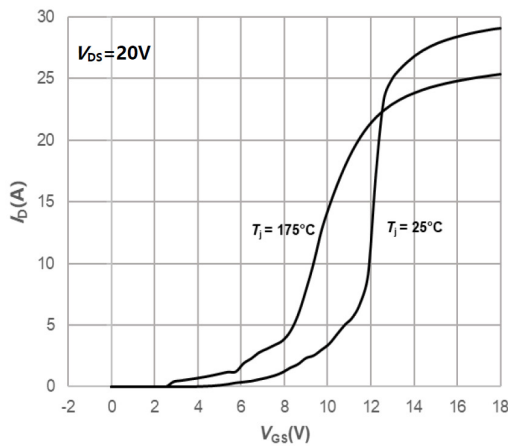


Fig3. Typical Transfer Characteristics

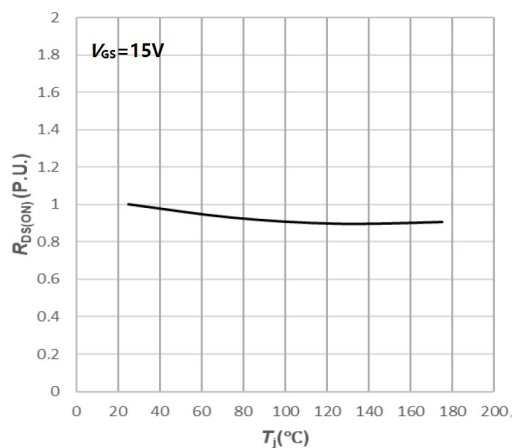


Fig4. Normalized On-Resistance vs. Temperature

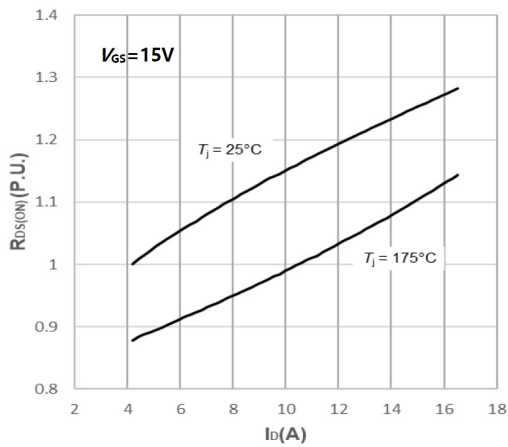


Fig5. Normalized On-Resistance vs. Drain Current For Various Temperatures

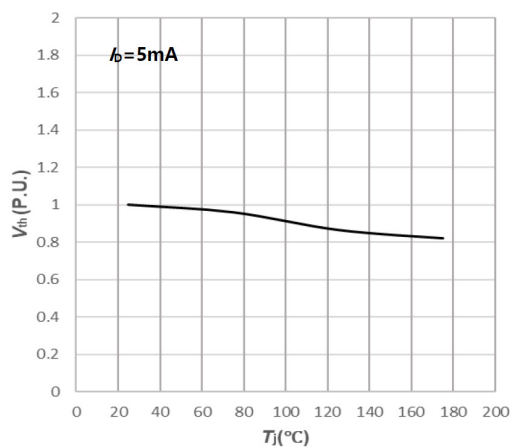
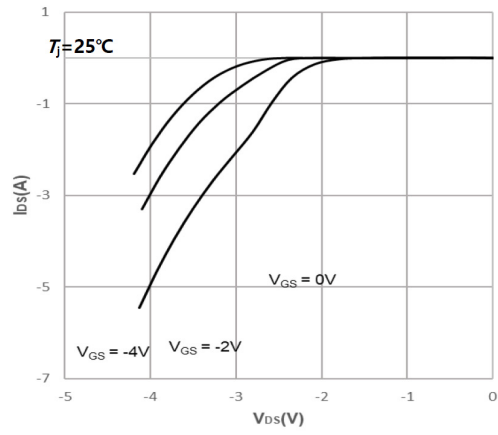
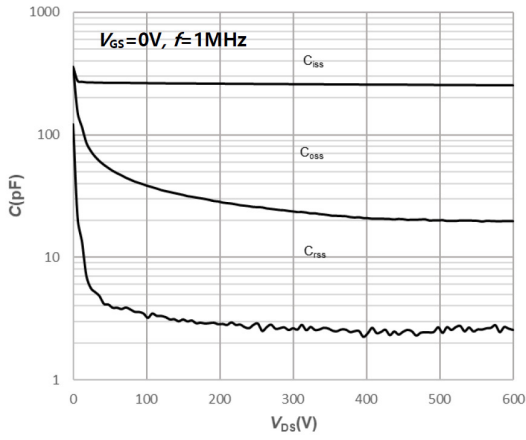
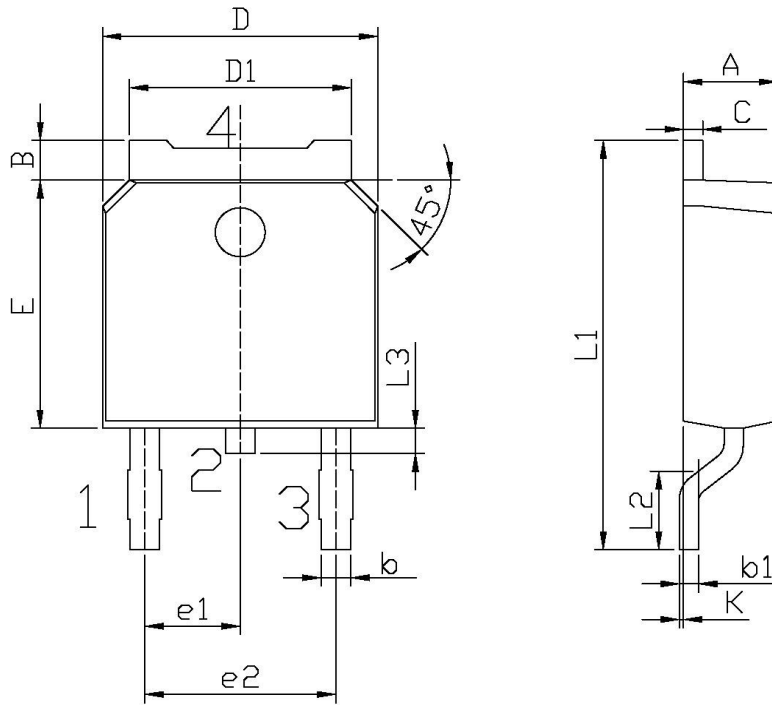


Fig6. Normalized Threshold Voltage vs. Temperature

电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

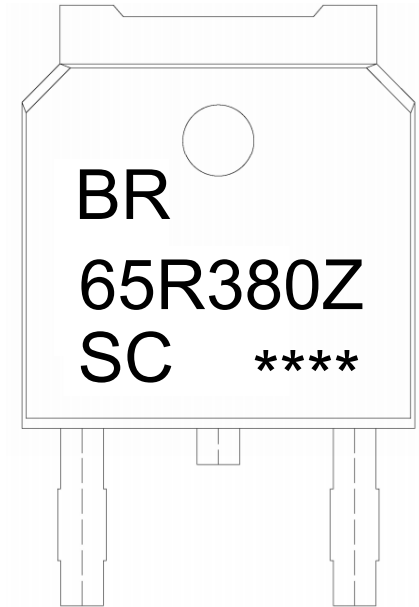


单位: mm

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

TO-252

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

65R380Z： 为型号代码

SC： 为碳化硅

\*\*\*\*： 为生产批号代码，随生产批号变化

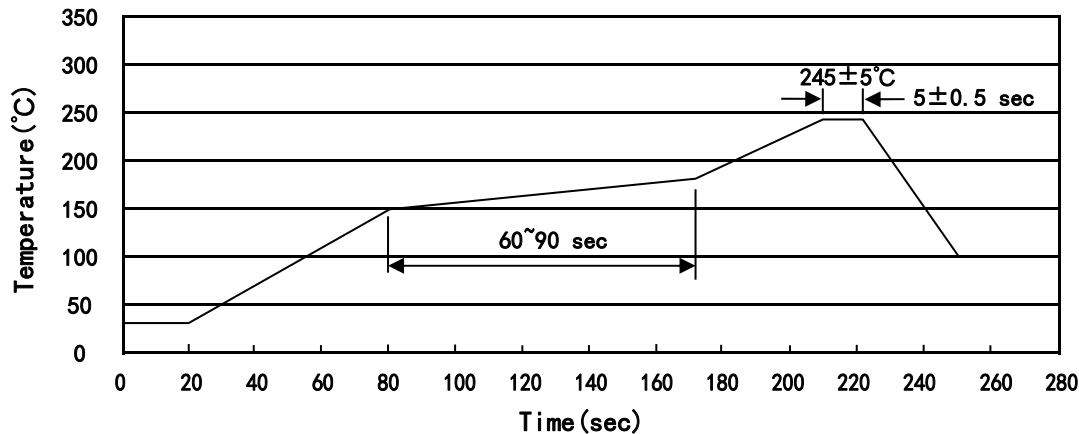
Note:

BR: Company Code

65R380Z: 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 <sup>3</sup> )		
	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 <sup>3</sup> )		
	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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