

BRD65R800C

Rev.A May.-2024

/ Descriptions

TO-252 N 650V

N-CHANNEL 650V Super-Junction Power MOSFET in a TO-252 Plastic Package.

/ Features

$R_{DS(on)}$ C_{rss}

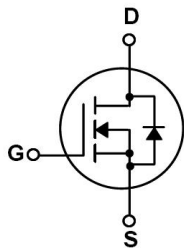
Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching, HF Product.

/ Applications

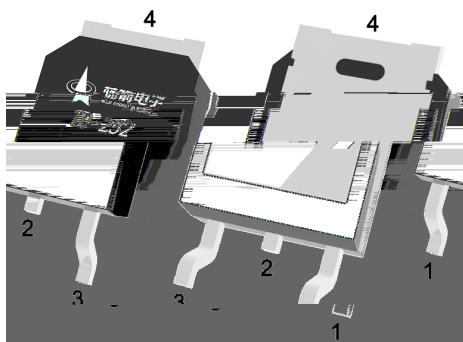
DC/DC

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

/ Equivalent Circuit



/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	6	A
Drain Current - Pulsed	I_{DM}	24	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	50	mJ
Avalanche Current	I_{AS}	3.4	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	45	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Junction-to-Ambient	$R_{\theta JA}$	60	/W
Junction-to-Case	$R_{\theta JC}$	2.7	/W

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	650	690		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V$ $V_{GS}=0V$ $T_J=25^\circ\text{C}$			1.0	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.5	3.7	4.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=1.5A$		650	800	m Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_{SD}=1A$ $T_J=25^\circ\text{C}$			1.3	V
Gate Resistance	R_g	$V_{GS}=0V$ $f=1.0MHz$		15		Ω
Input Capacitance	C_{iss}	$V_{DS}=100V$ $V_{GS}=0V$ $f=1.0MHz$		350		pF
Output Capacitance	C_{oss}			15		pF
Reverse Transfer Capacitance	C_{rss}			1.5		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=400V$ $I_D=2A$ $V_{GS}=10V$ $R_G=25\Omega$		8.5		ns
Turn-On Rise Time	t_r			10.3		ns
Turn-Off Delay Time	$t_{d(off)}$			37		ns
Turn-Off Fall Time	t_f			15		ns


/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_S				6	A
Total Gate Charge	Q_g	$V_{DS}=520V \quad I_D=2A$ $V_{GS}=10V$		7.3		nC
Gate-Source Charge	Q_{gs}			1.5		nC
Gate-Drain Charge	Q_{gd}			3.5		nC
Reverse recovery time	T_{rr}	$V_R=50V, I_F=2A,$ $dI_F/dt=100A/\mu s$		120		ns
Reverse recovery charge	Q_{rr}			0.7		uC

/ Electrical Characteristic Curve

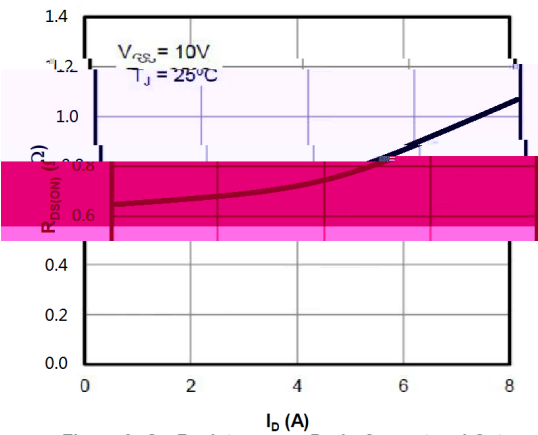
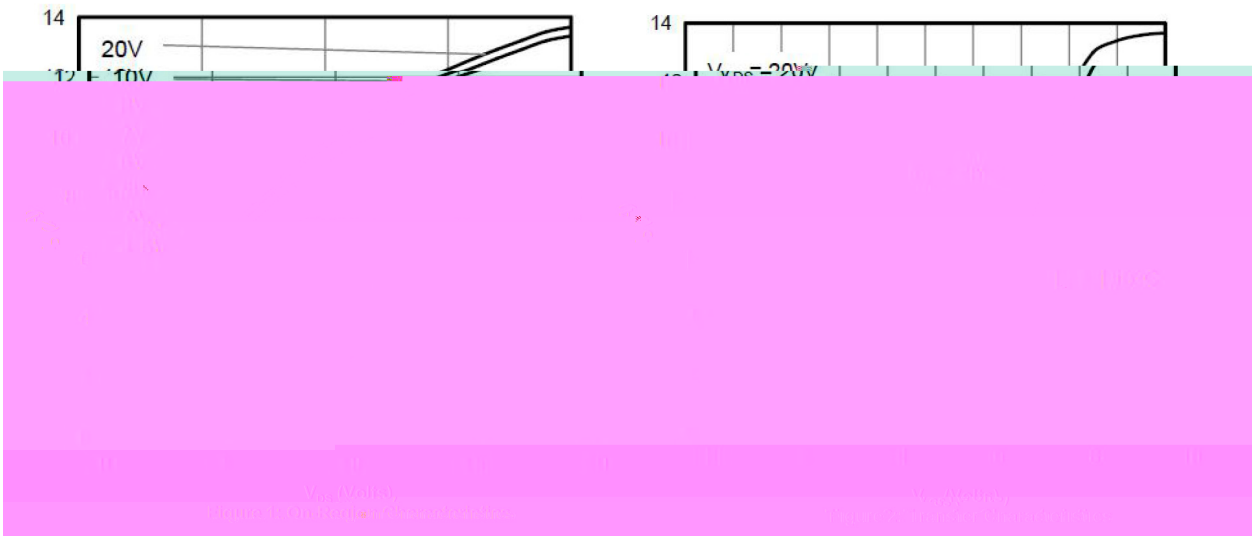


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

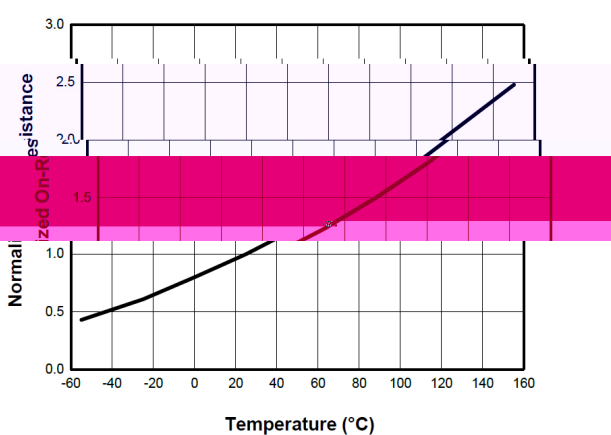
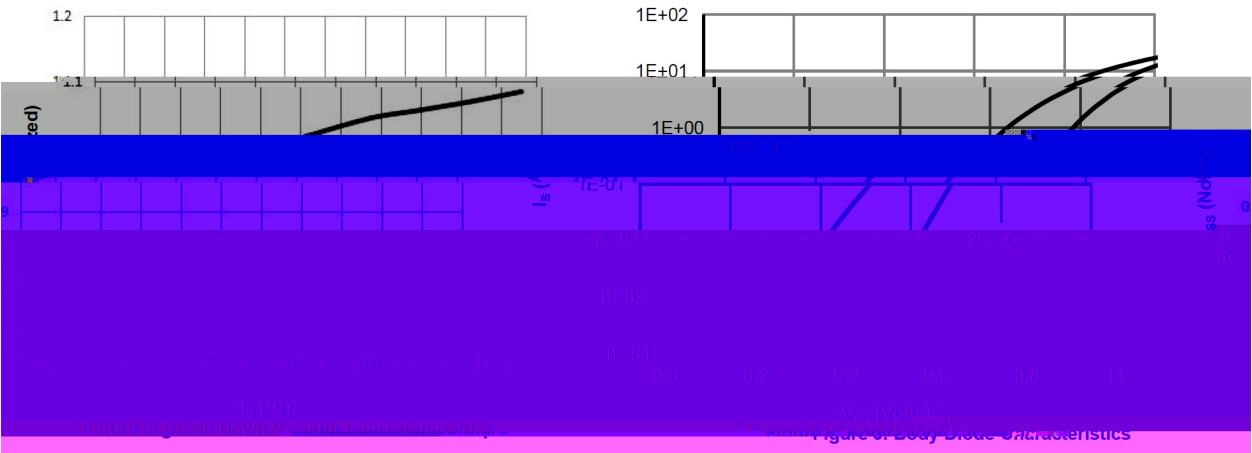


Figure 4: On-Resistance vs. Junction Temperature



/ Electrical Characteristic Curve

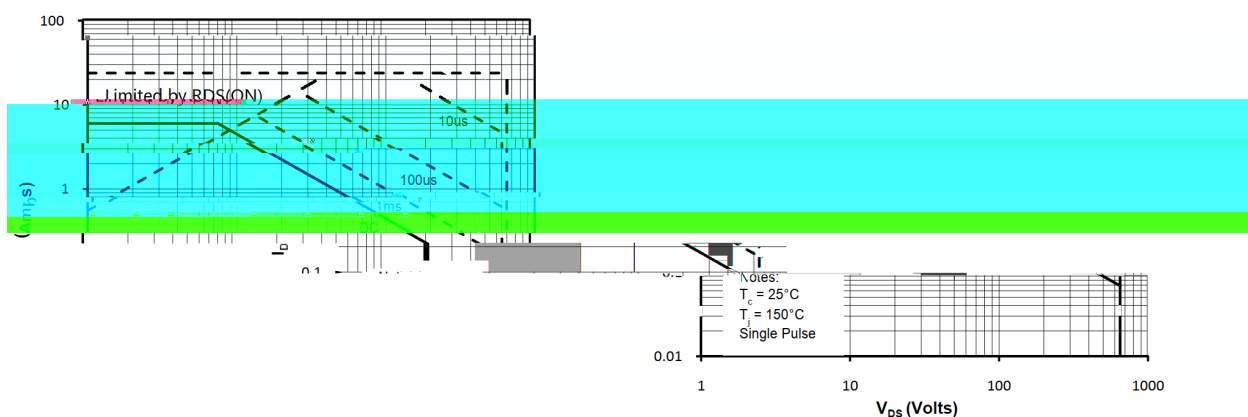
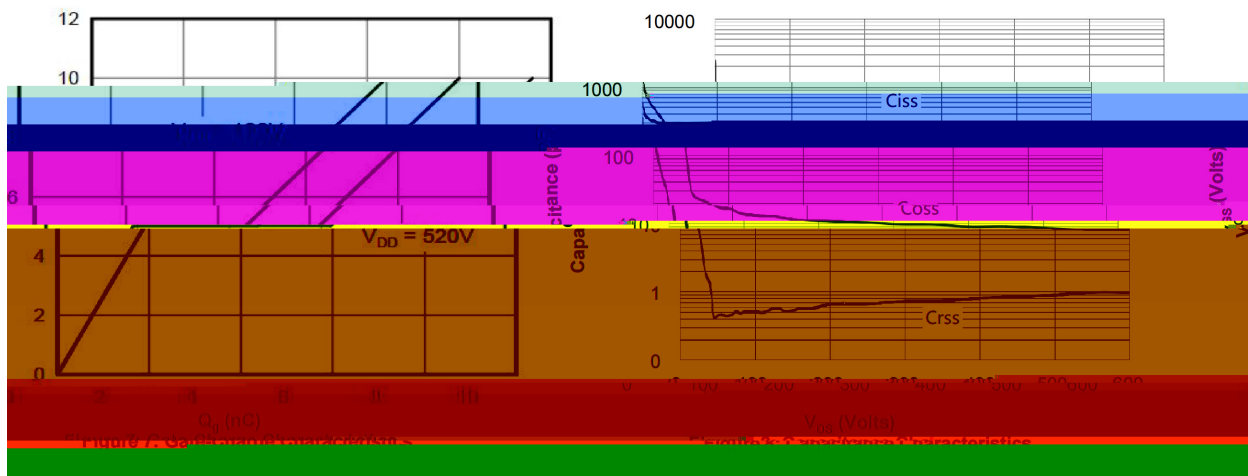


Figure 9 : Maximum Forward Biased Safe Operating

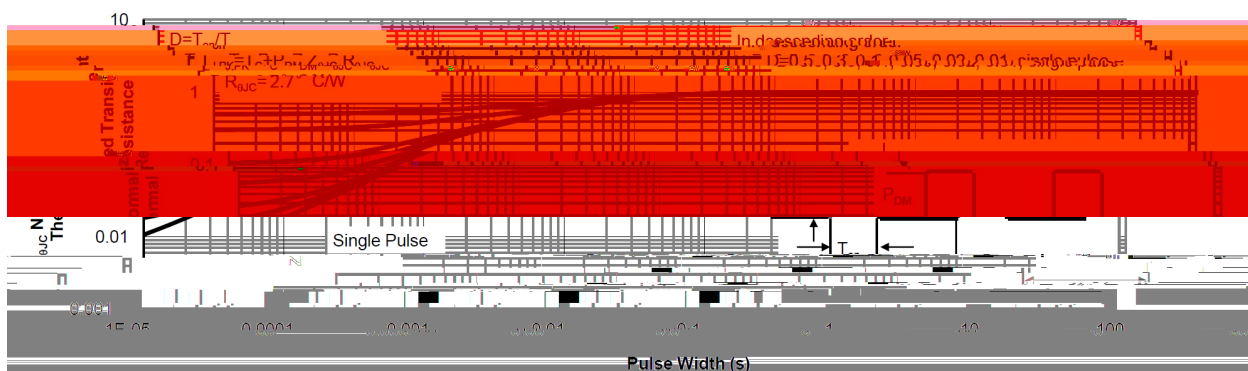
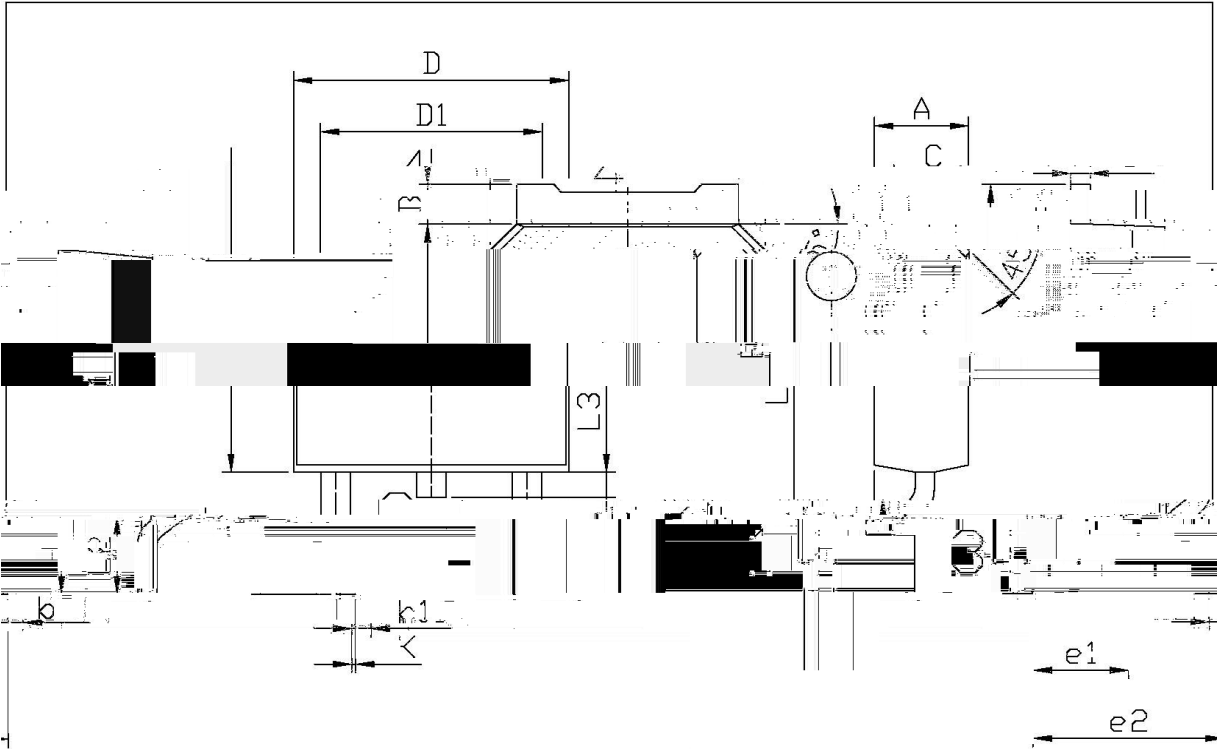


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

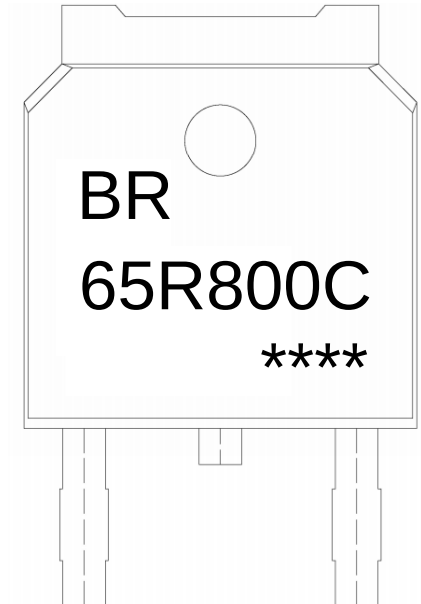


单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	6.25	7.20	L3	5.95	6.95
B	2.34	0.95	e1	2.24	2.24
C	4.23	0.70	e2	4.42	4.42
D	10.35	0.45	L4	9.85	9.85
D1	0.90	0.55	L5	2.00	2.00
D2	6.45	6.75	L6	0.60	0.60
D3	5.10	5.50	L7	0.50	0.50

T0-252

/ Marking Instructions



BR

65R800C

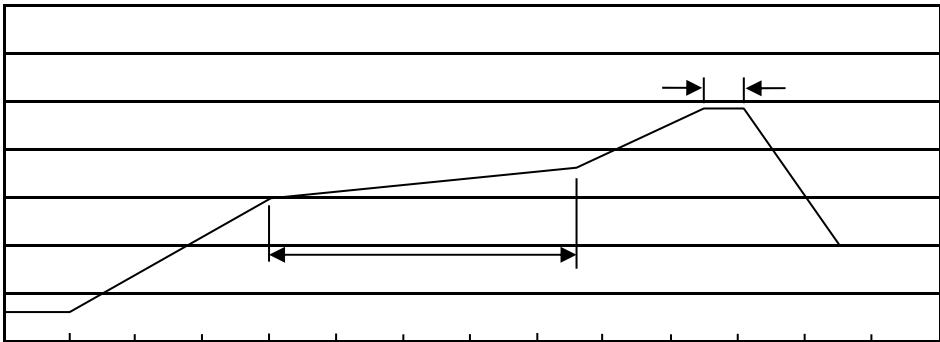
Note:

BR: Company Code

65R800C: Product Type Code

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

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , Time:60~90sec.
- 2

245±5

5±0.5sec;

2.Peak Temp.:245±5 , Duration:5±0.5sec.
- 3

2 10 /sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13 ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices