

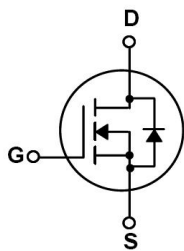
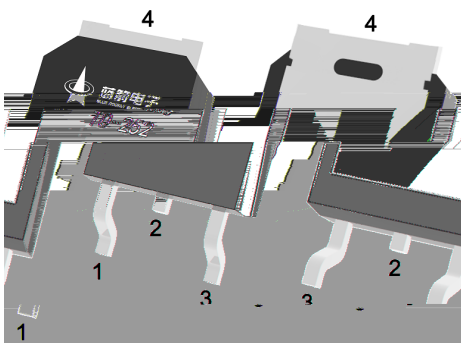
/ Descriptions

TO-252 N 650V

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

/ Features $U_{GS(rq)}$, F_{UV} Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching, HF Product.**/ Applications**

Power factor correction, Switched mode power supplies, Uninterruptible Power Supply.

/ Equivalent Circuit**/ Pinning**

PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

/ Marking

See Marking Instructions.

BRD65R280T

Rev.A Apr.-2025

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	14	A
Drain Current - Pulsed	I_{DM}	56	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	212	mJ
Avalanche Current	I_{AS}	7	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	138	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Junction-to-Case	$R_{\theta JC}$	0.9	/W
Junction-to-Ambient	$R_{\theta JA}$	55	/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	650			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	3.0	4.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=7.5A$		220	280	m Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_{SD}=1A$ $T_J=25^\circ\text{C}$			1.2	V
Gate Resistance	R_g	$V_{GS}=0V$ $f=1.0\text{MHz}$		14		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		780		pF
Output Capacitance	C_{oss}			1300		pF
Reverse Transfer Capacitance	C_{rss}					

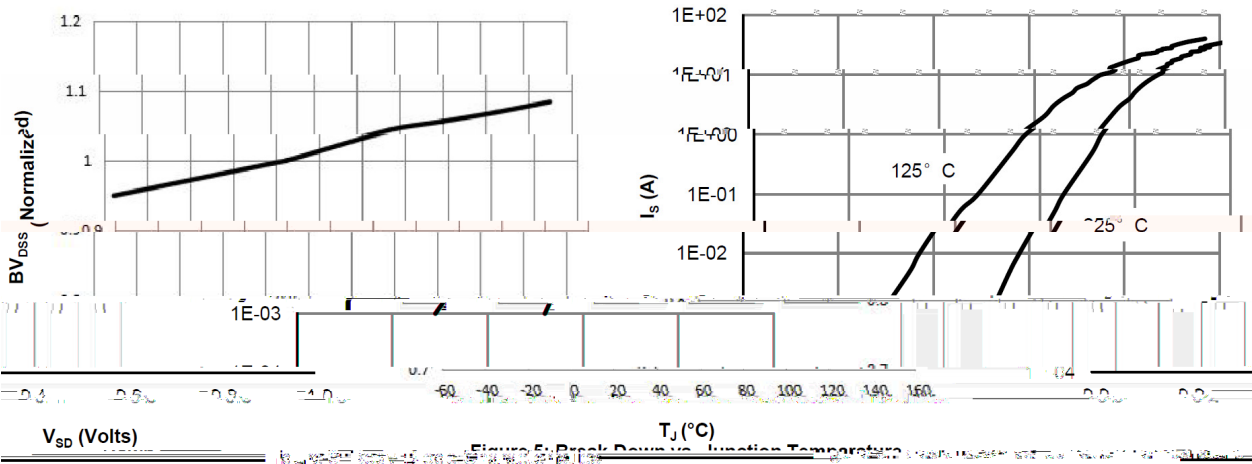
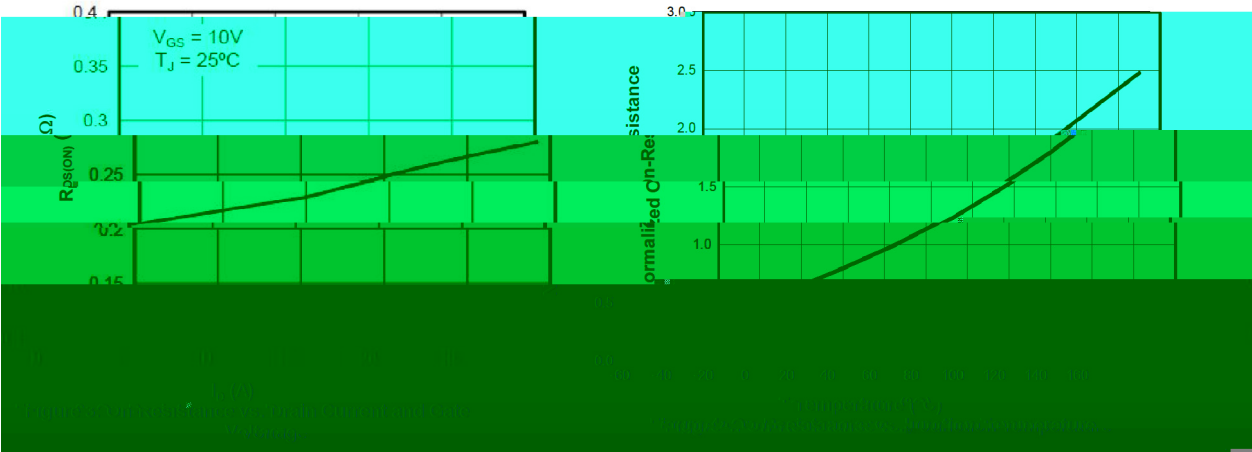
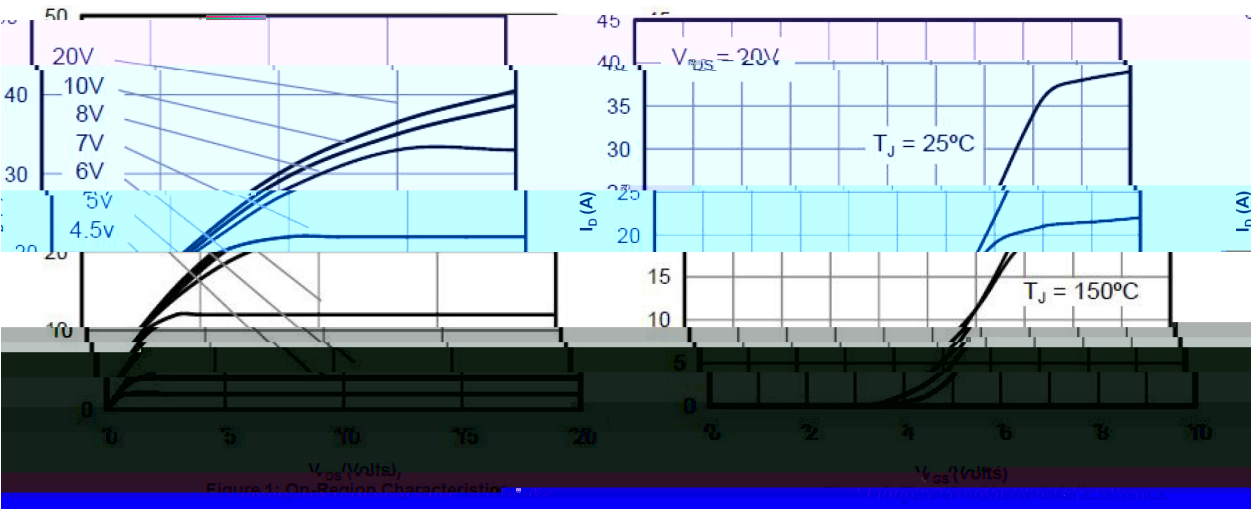
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/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I _S				14	A
Total Gate Charge	Q _g	V _{DS} =520V I _D =7.5A V _{GS} =10V		23.7		nC
Gate-Source Charge	Q _{gs}			4.8		nC
Gate-Drain Charge	Q _{gd}			2.6		nC
Reverse recovery time	t _{rr}	V _R =400 V, I _F =7.5A, dI _F /dt=100 A/μs		229		ns
Reverse recovery charge	Q _{rr}			2.4		uC

/ Electrical Characteristic Curve



/ Electrical Characteristic Curve

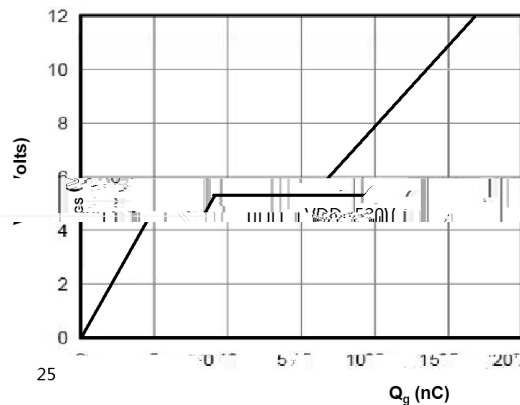


Figure 7: Gate-Charge Characteristics

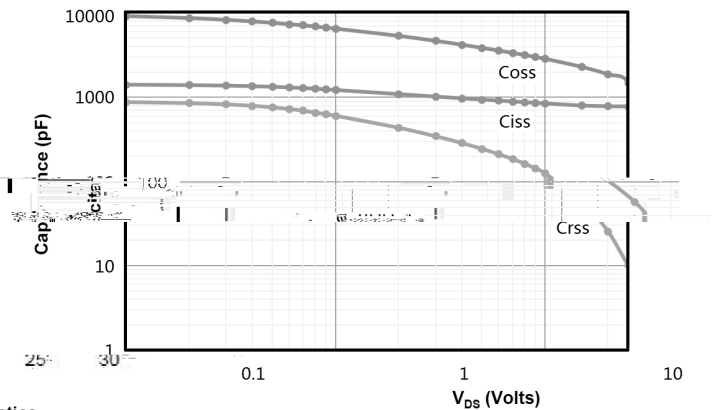


Figure 8: Capacitance Characteristics

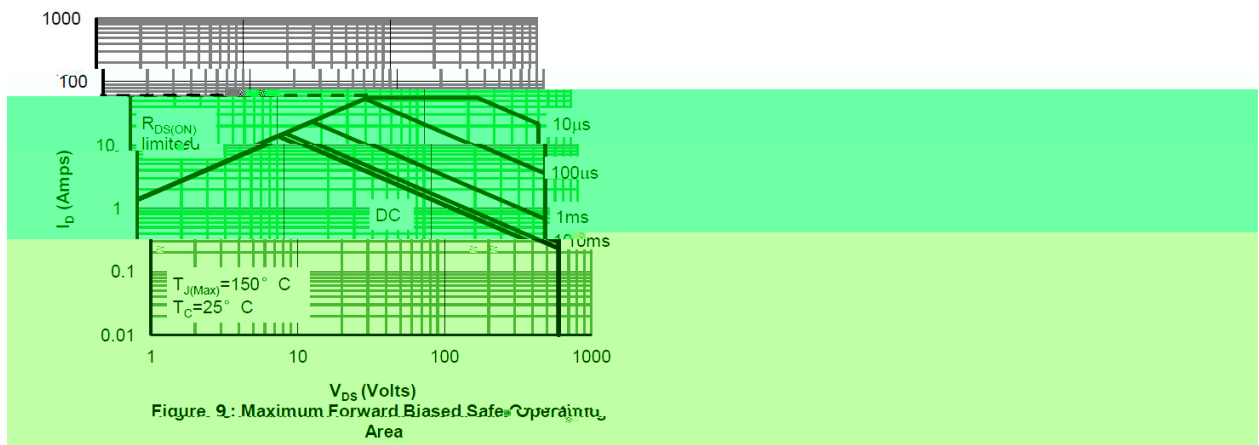


Figure 9: Maximum Forward Biased Safe Operating Area

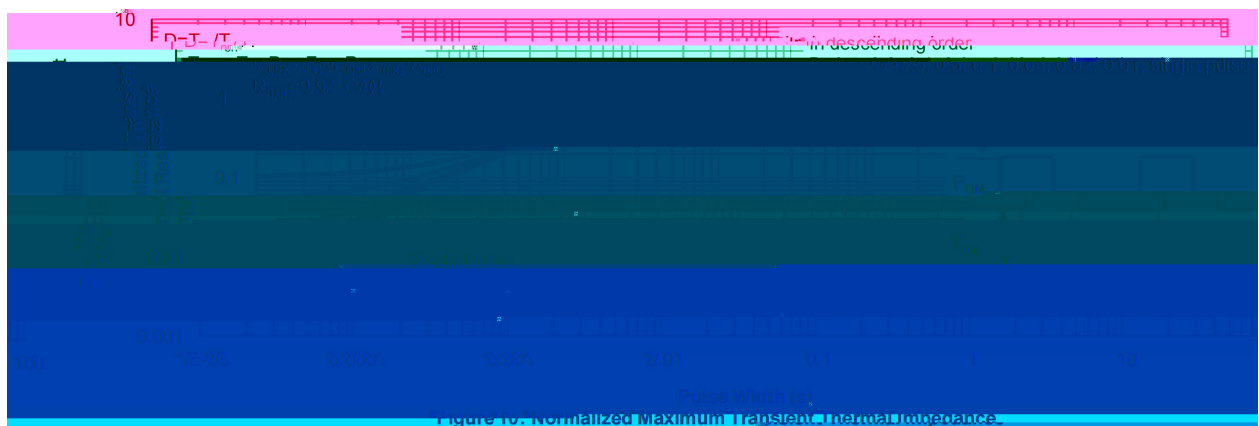
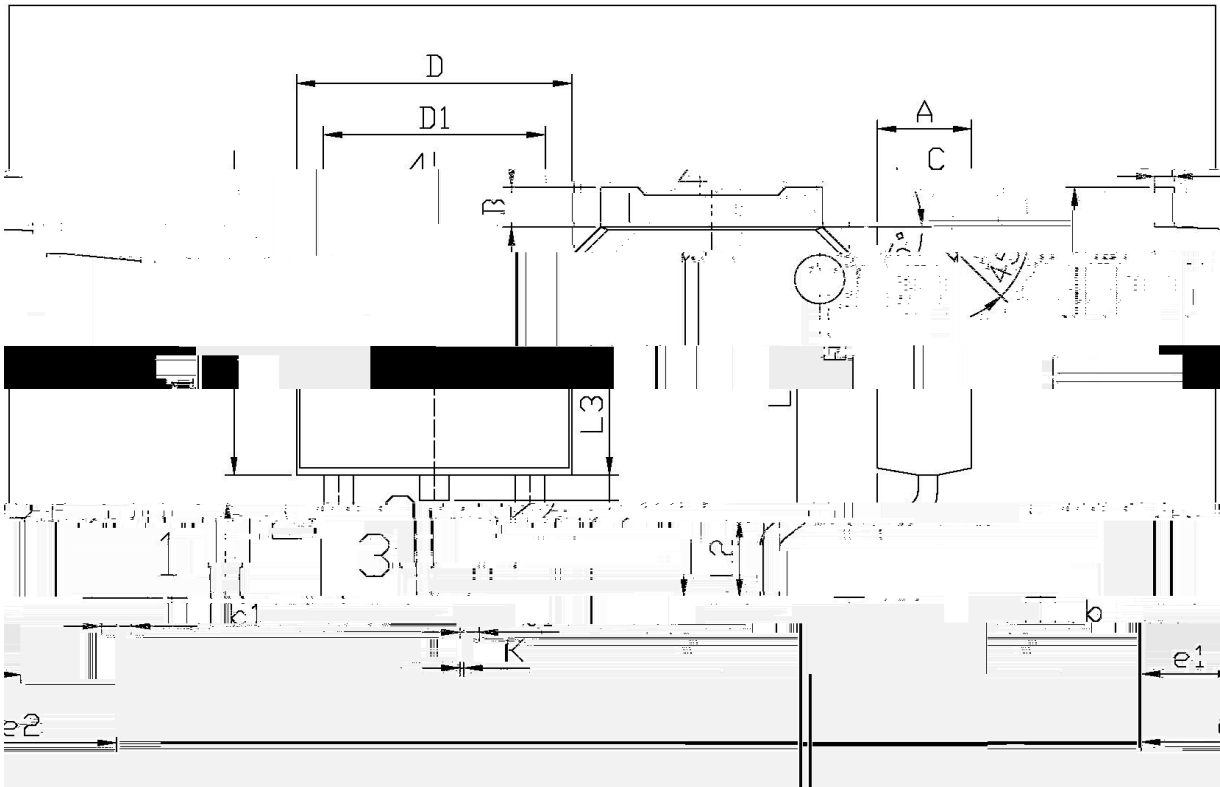


Figure 16. Normalized Maximum Transient Thermal Impedance.

/ Package Dimensions



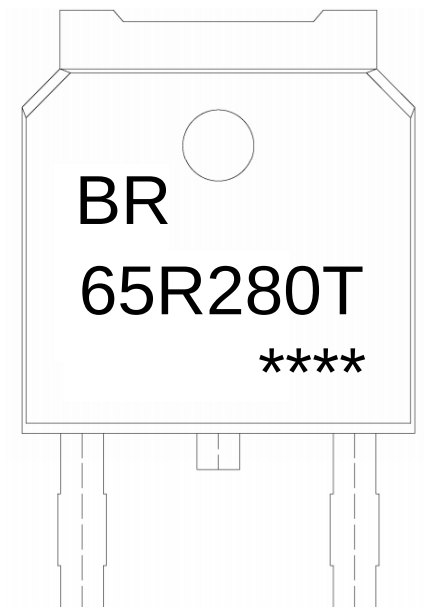
单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L1	9.85	10.35	L2	1.70	2.00
L3	0.90	1.10	L4	0.75	1.00
K	0.00	0.10	K1	0.10	0.15
e1	1.25	1.50	e2	0.45	0.55
b	0.45	0.55	b1	0.45	0.55
A	2.40	2.60	A1	1.25	1.50
B	0.95	1.05	B1	0.45	0.55
C	0.70	0.80	C1	0.45	0.55
D	6.25	6.50	D1	5.95	6.25
D1	5.95	6.25	D2	5.95	6.25

T0-252



/ Marking Instructions



BR

98U583W

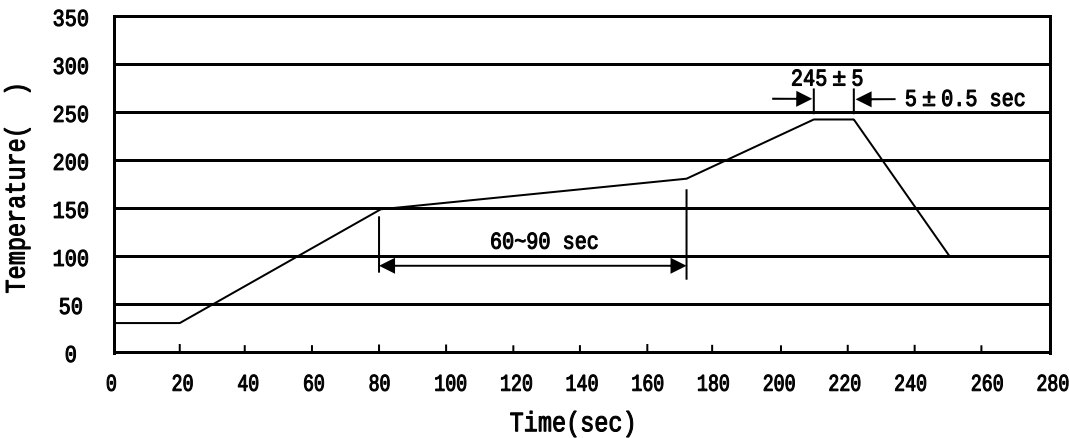
Note:

BR: Company Code

65R280T: 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