

descriptions

TO-252 N 650V

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

features

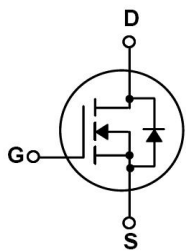
$R_{DS(on)}$ C_{rss}

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

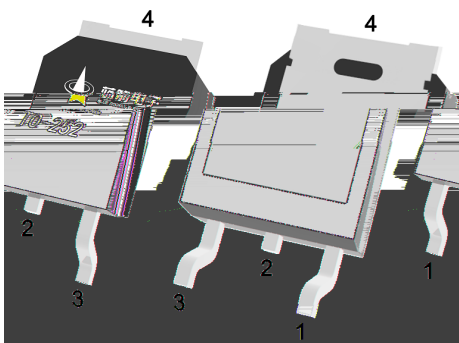
applications

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

quivalent circuit



pinning



PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

marking

See Marking Instructions.

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Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	11	A
Drain Current - Pulsed	I_{DM}	44	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	243	mJ
Avalanche Current	I_{AS}	7.5	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	125	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Junction-to-Case	R_{JC}	1	/W
Junction-to-Ambient	R_{JA}	55	/W

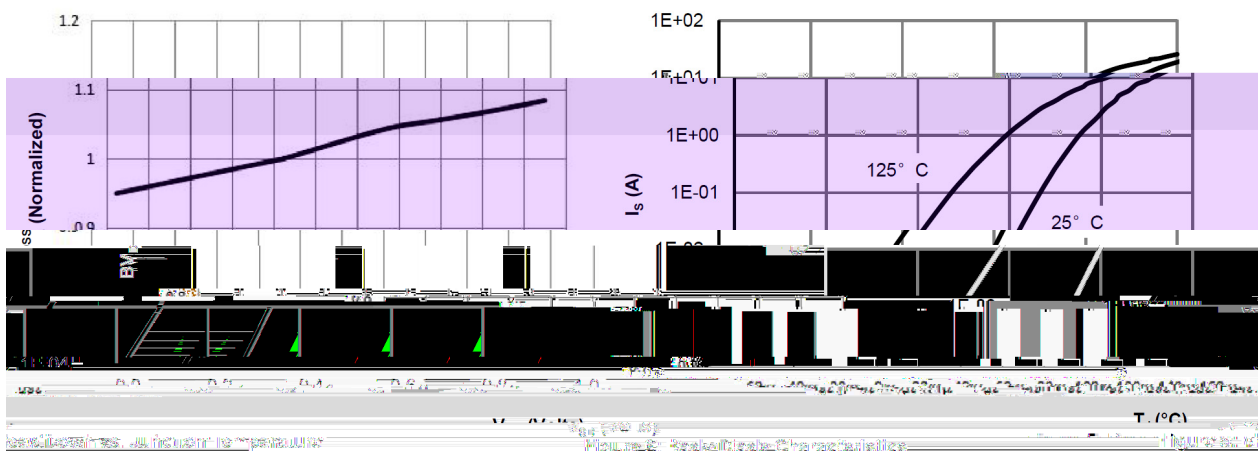
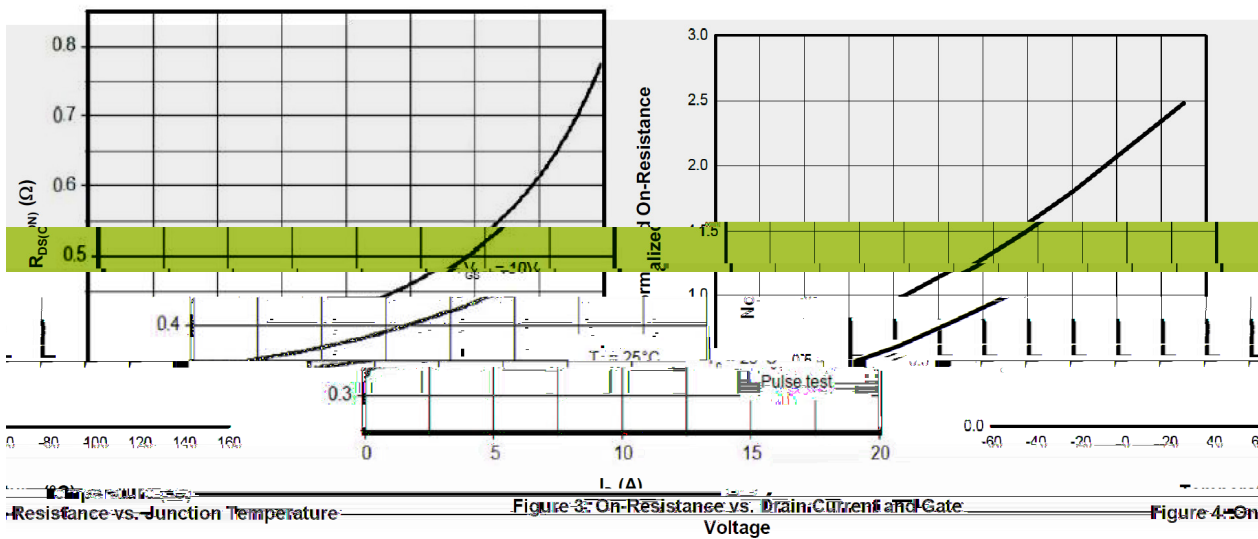
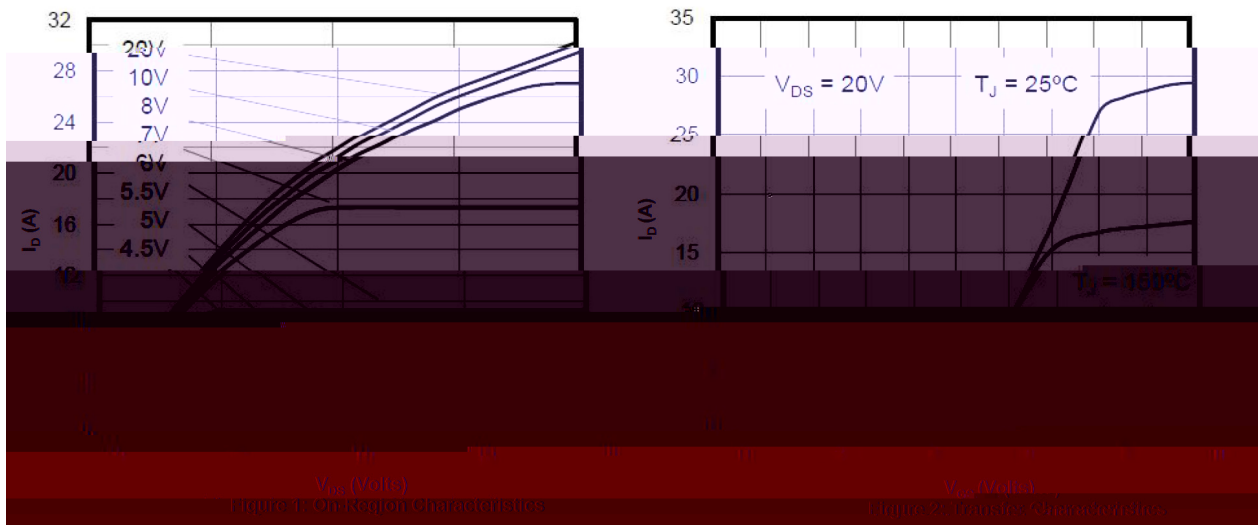
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Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\text{ }\mu\text{A}$	650			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V$ $V_{GS}=0V$ $T_J=25^\circ\text{C}$			1.0	A
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\text{ }\mu\text{A}$	2.5	3.3	4.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=5.5A$		370	380	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	$V_{GS}=0V$ $f=1.0\text{MHz}$		9.5		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		690		pF
Output Capacitance	C_{oss}			940		pF
Reverse Transfer Capacitance	C_{rss}			11		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=400V$ $I_D=5.5A$ $R_G=25\text{ }\Omega$ $V_{GS}=10V$		44.8		ns
Turn-On Rise Time	t_r			19.3		ns
Turn-Off Delay Time	$t_{d(off)}$			68.3		ns
Turn-Off Fall Time	t_f			16.5		ns

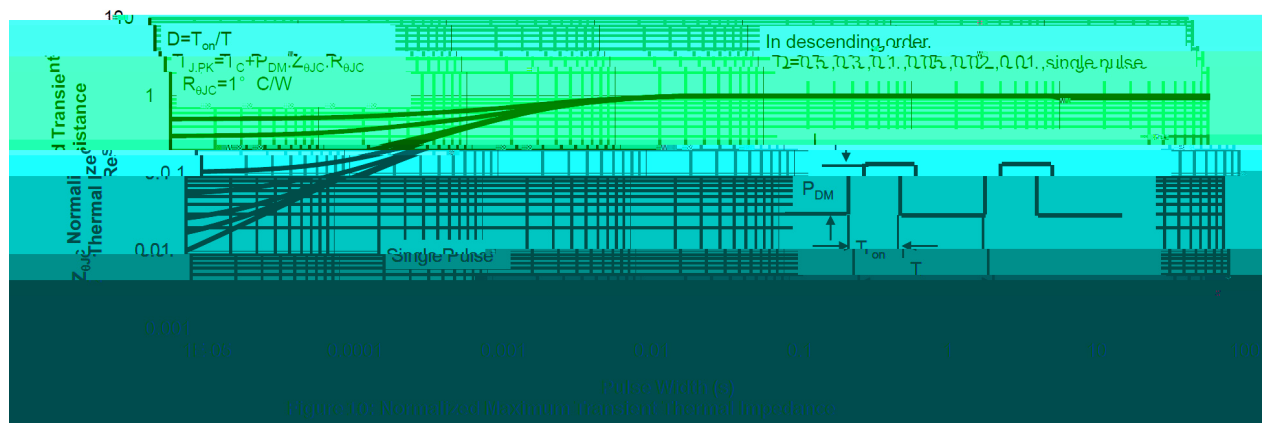
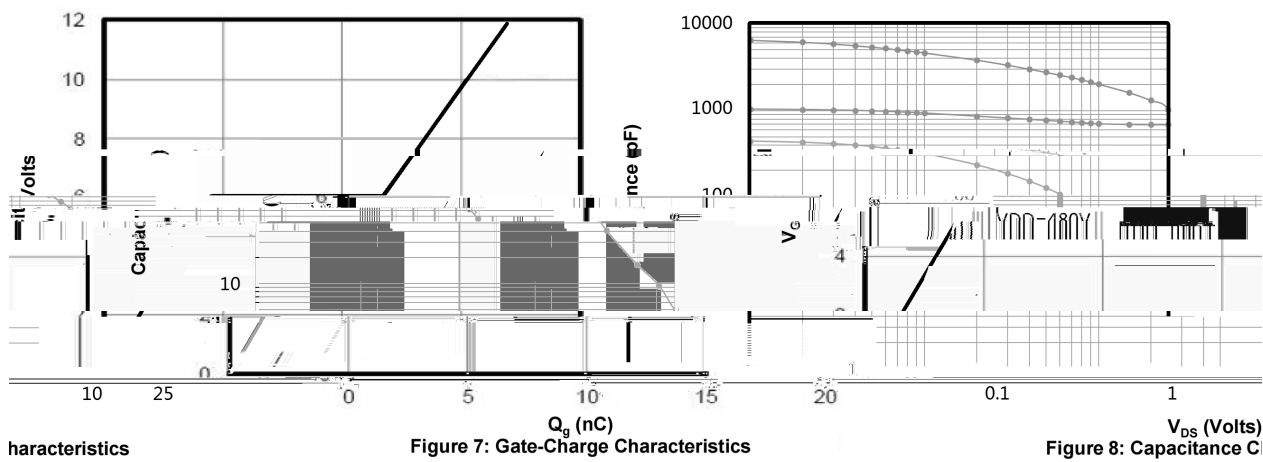
electrical Characteristics (Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_S				11	A
Total Gate Charge	Q_g	$V_{DS}=480V \quad I_D=5.5A$ $V_{GS}=10V$		15.8		nC
Gate-Source Charge	Q_{gs}			4.3		nC
Gate-Drain Charge	Q_{gd}			1.7		nC
Reverse recovery time	T_{rr}	$V_R=400V, I_F=5.5A,$ $dI_F/dt=100A/\mu s$		194.6		ns
Reverse recovery charge	Q_{rr}			1.8		μC

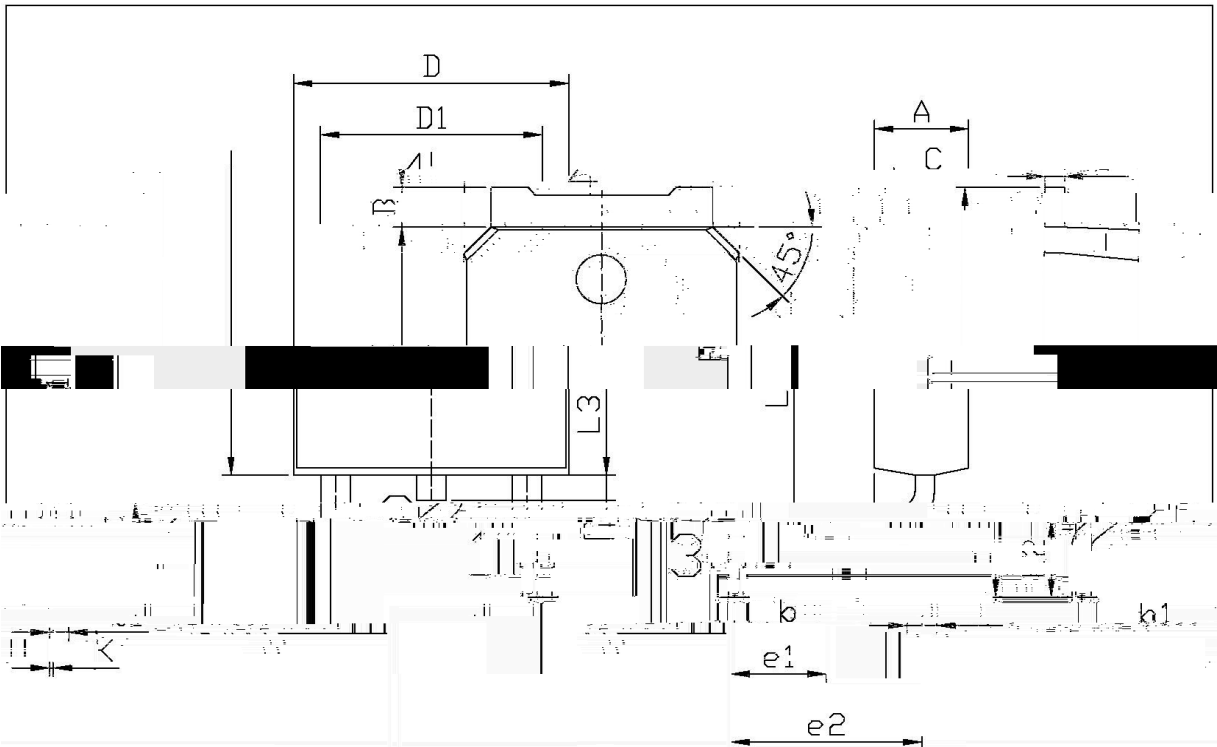
electrical Characteristics Curve



electrical Characteristics Curve



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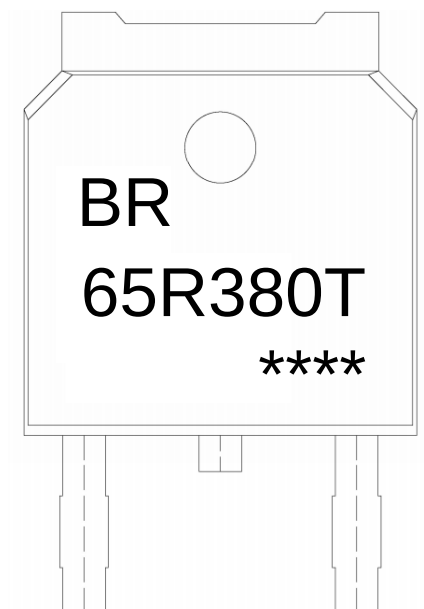


单位: mm

Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	2.95	3.30	A	2.70	2.70
B	0.95	1.25	B	0.95	1.25
C	9.85	10.35	C	9.85	10.35
D	6.45	6.75	D	6.45	6.75
D1	5.10	5.10	D1	5.10	5.10
e1	2.24	2.34	e1	2.24	2.34
e2	2.24	2.34	e2	2.24	2.34
h1	0.60	0.90	h1	0.60	0.90
L3	0.60	0.90	L3	0.60	0.90
b	0.45	0.55	b	0.45	0.55
4'	0.45	0.55	4'	0.45	0.55
45°	0.45	0.55	45°	0.45	0.55

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BR

65R380T

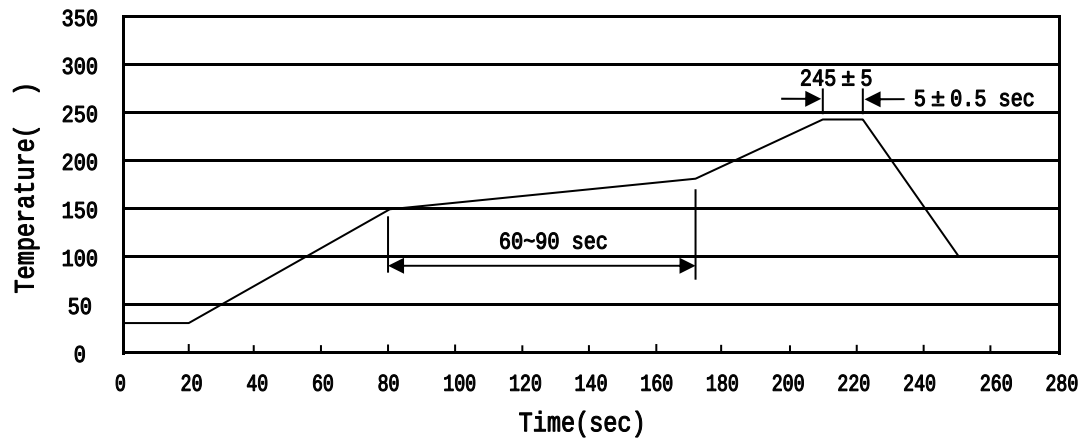
Note:

BR: Company Code

65R380T: 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 °C, Time:60~90sec. |
| 2 | 245±5 | | 5±0.5sec; | | 2.Peak Temp.:245±5 °C, Duration:5±0.5sec. |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 °C/sec. |

Resistance to Soldering Heat Test Conditions

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

Packaging Specifications

/ 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

Notes