

BRFL65R180T

Rev.A Apr.-2025

/ Descriptions

TO-220FL N 650V

N-CHANNEL 650V Super-Junction Power MOSFET in a TO-220FL Plastic Package.

/ Features

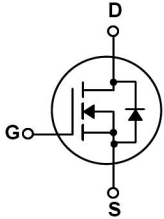
$R_{DS(on)} \times Q_g$ 100% ROHS

Very low $R_{DS(on)} \times Q_g$, 100% avalanche tested, RoHS compliant, HF Product.

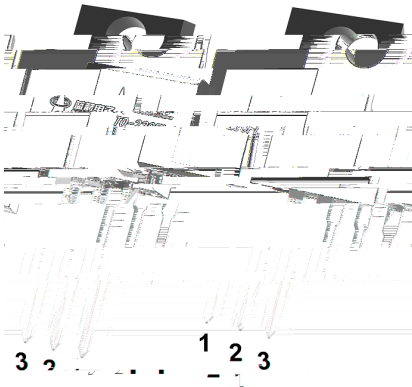
/ Applications

For switch mode power supply, uninterruptible power supply, power factor correction.

/ Equivalent Circuit



/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

/ Marking

See Marking Instructions.

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DATA SHEET

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Drain Current	$I_D(T_c=25^\circ\text{C})$	20	A
Drain Current - Pulsed	I_{DM}	60	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	488	mJ
Avalanche Current	I_{AS}	9.5	A
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	34	W
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to 150	
Junction-to-Case	R_{JC}	3.6	/W
Junction-to-Ambient	R_{JA}	80	/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\text{A}$	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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\text{A}$	2.5		4.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		150	180	m
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	$V_{GS}=0V, f=1.0\text{MHz}$		3.5		
Input Capacitance	C_{iss}			1500		pF
Output Capacitance	C_{oss}	$V_{DS}=100V, V_{GS}=0V, f=1.0\text{MHz}$	3.1	00	00	pF

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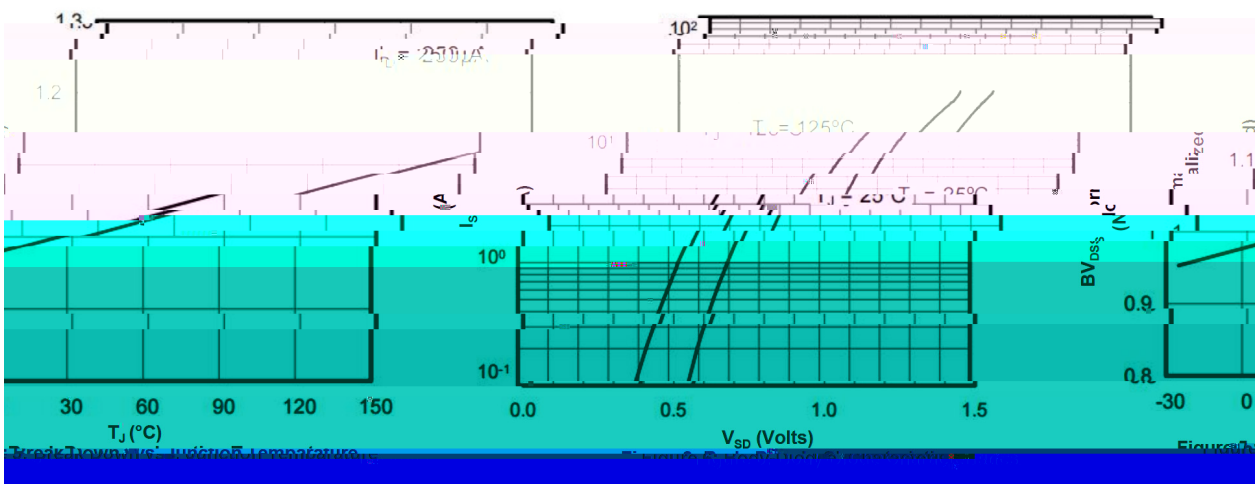
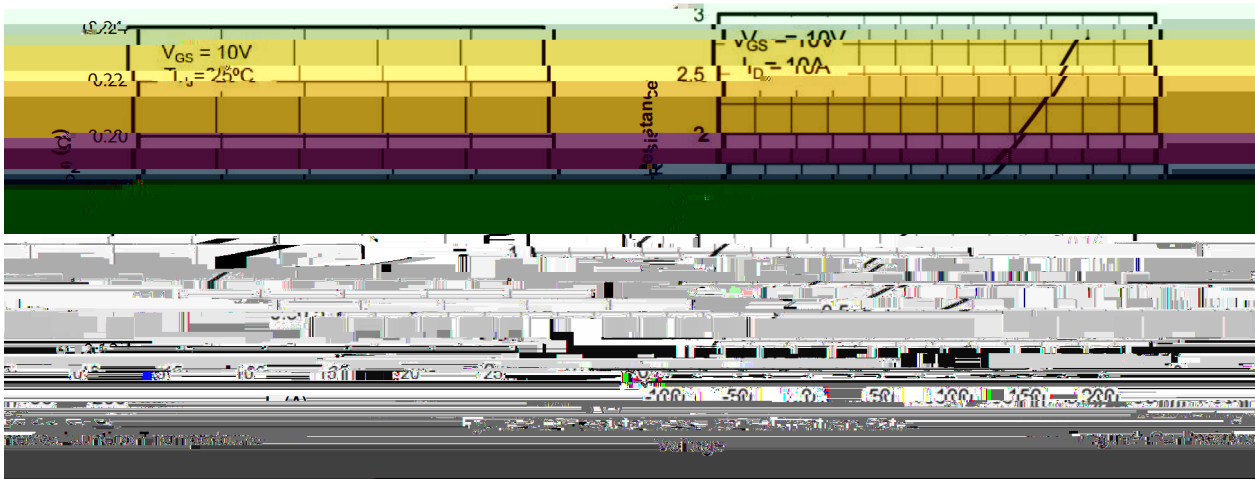
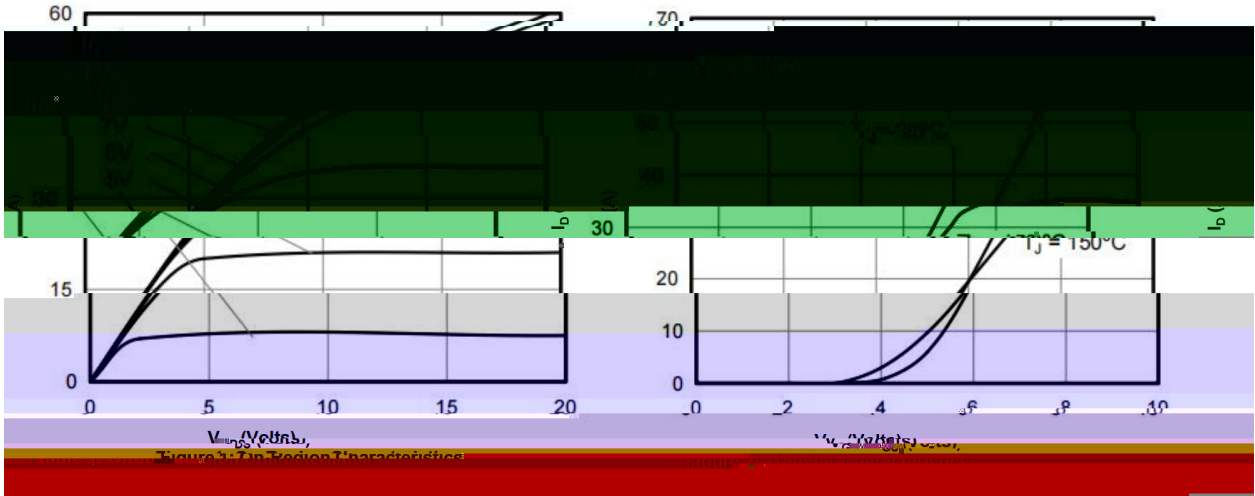
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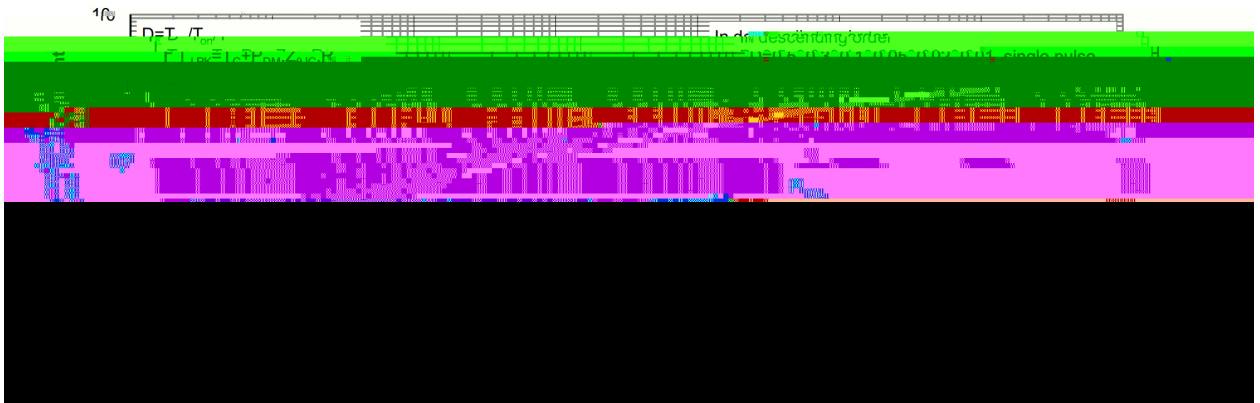
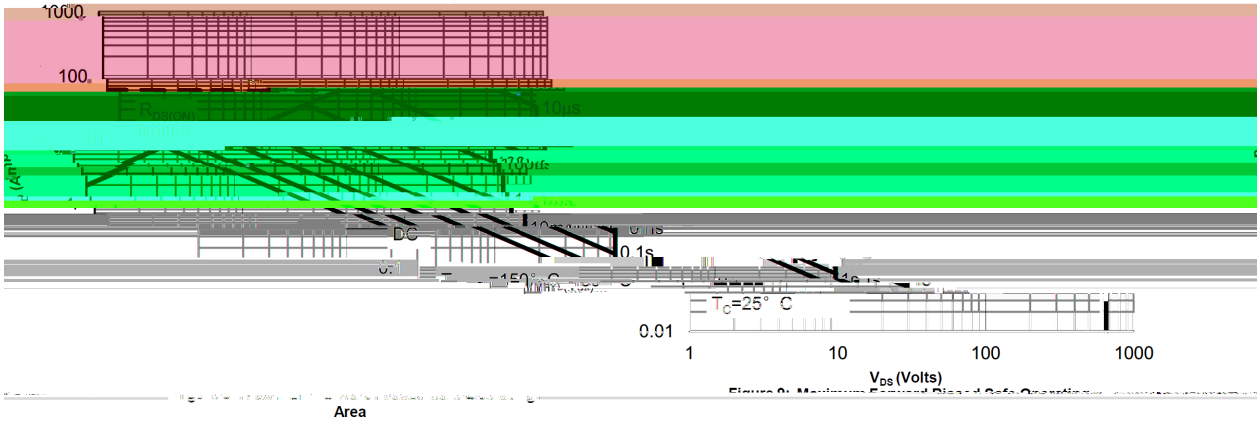
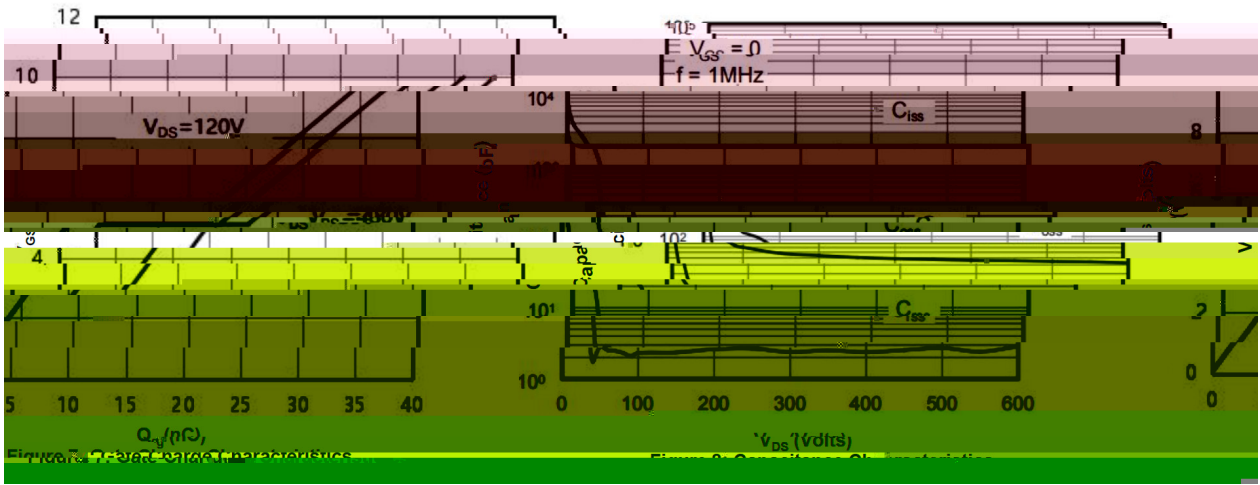
DATA SHEET

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_S			20		A
Total Gate Charge	Q_g	$V_{DS}=480V$ $I_D=10A$ $V_{GS}=10V$		28.1		nC
Gate-Source Charge	Q_{gs}			8.1		nC
Gate-Drain Charge	Q_{gd}			2.1		nC
Reverse recovery time	t_{rr}	$V_R=400V$, $I_F=10A$, $dI_F/dt=100A/s$		283		ns
Reverse recovery charge	Q_{rr}			3.3		uC

/ Electrical Characteristic Curve



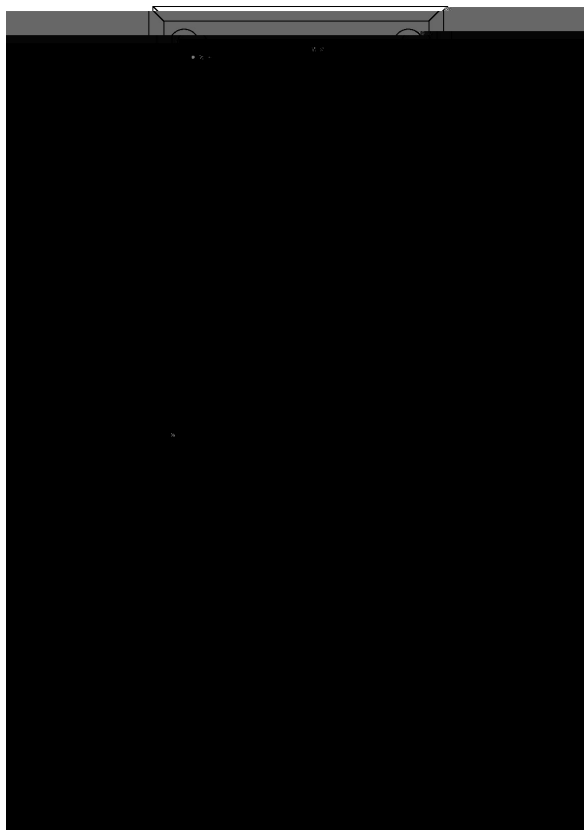
/ Electrical Characteristic Curve



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/ Marking Instructions



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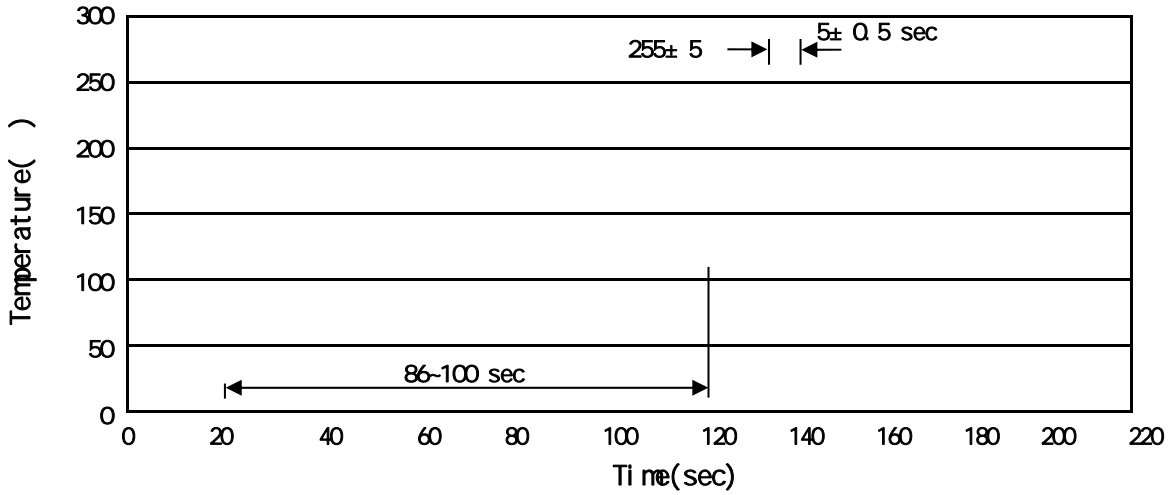
Note:

BR: Company Code

65R180T: Product Type Code

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

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- 1 25 150 60 90sec; 1.Preheating:25~150 , Time:60~90sec.
- 2 255±5 5±0.5sec; 2.Peak Temp.:255±5 , Duration:5±0.5sec.
- 3 2 10 /sec. 3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

270±5 10±1 sec. Temp.:270±5 Time:10±1 sec

/ Packaging SPEC.

/ 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-220FL	50	20	1,000	5	5,000	532×33×7.0	555×164×50	575×290×180

/ Notices