"Yـ / Descriptions

TO-220FL N 650V

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

◕ È / Features

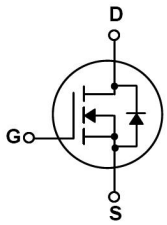
$R_{DS(on)}$×Qg 100% ROHS

Very low $R_{DS(on)}$×Qg,100%avalanche tested,RoHS compliant.

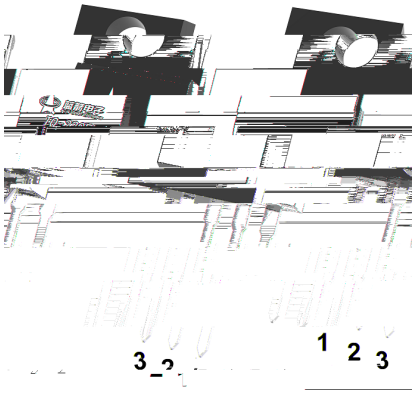
٧ ِ / Applications

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

Л ً ٚ ≠ ع / Equivalent Circuit



ẫ ﻉ ṷ ̃ / Pinning



PIN1 G PIN 2 D PIN 3 S

ł . ʜ ↄ / Marking

See Marking Instructions.

ώ ̈ Ξ ̃Ą / Absolute Maximum Ratings(Ta=25 ɹ)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	650	V
Drain Current	I_D(Tc=25)	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(Tc=25)	30	W
Operating and Storage Temperature Range	T_J,T_{STG}	-55 to 150	
Junction-to-Case	R_{dJC}	4.2	/W
Junction-to-Ambient	R_{dJA}	65	/W

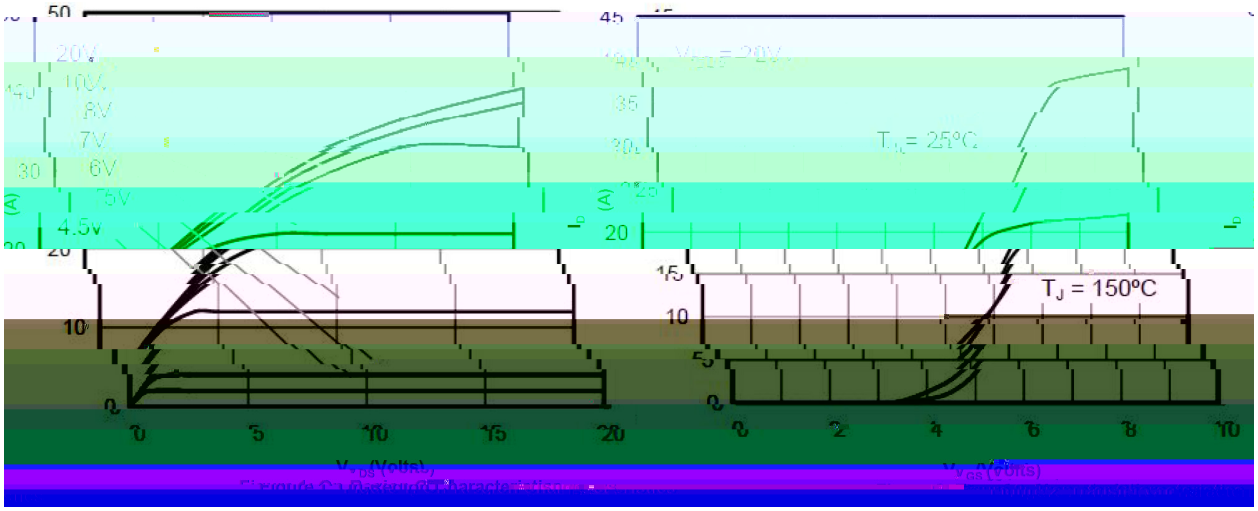
ɛ ʌ Ξ ̃Ą / Electrical Characteristics(Ta=25 ɹ)

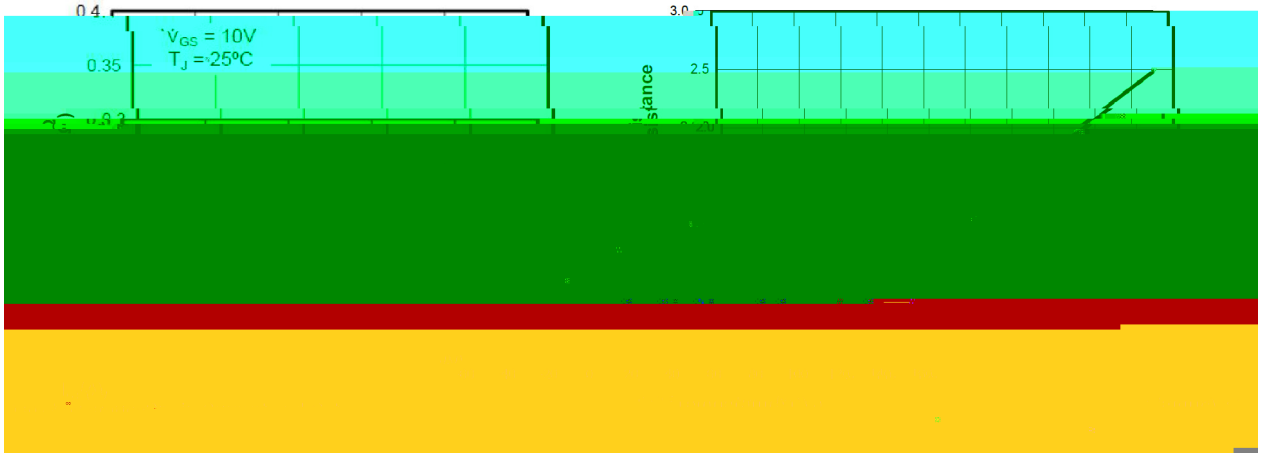
Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V	I_D=250εA	650			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V T_J=25	V_{GS}=0V			1.0	εA
Gate-Body Leakage Current, Forward	I_{GSS}	V_{GS}=±30V				±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}	I_D=250εA	2.5	3.0	4.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V	I_D=5.5A		220	280	mq
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V T_J=25	I_{SD}=1A			1.2	V
Gate Resistance	R_g	V_{GS} = 0V	f = 1.0MHz		14		q
Input Capacitance	C_{iss}	V_{DS}=25V f=1.0MHz	V_{GS}=0V		780		pF
Output Capacitance	C_{oss}				1300		pF
Reverse Transfer Capacitance	C_{rss}				10		pF
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=400V R_G=25q	I_D=7.5A V_{GS}=10V		48.7		ns
Turn-On Rise Time	t_r				25.0		ns
Turn-Off Delay Time	$t_{d(off)}$				114		ns
Turn-Off Fall Time	t_f				17.1		ns

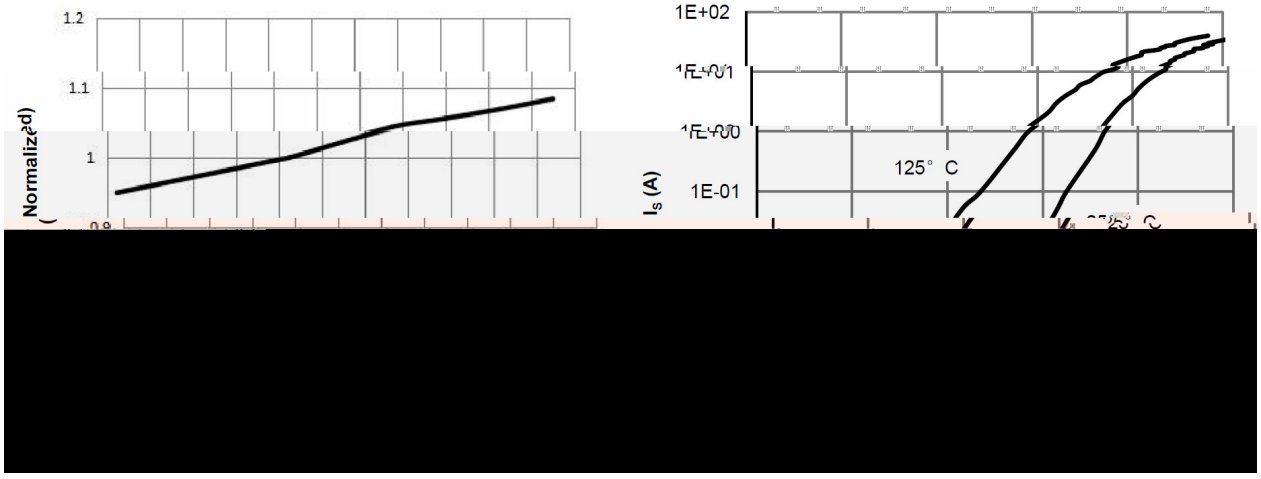
≠ ∧ ∃ Ạ / Electrical Characteristics(Ta=25 ⊿)

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/εs		229		ns
Reverse recovery charge	Q_{rr}			2.4		uC

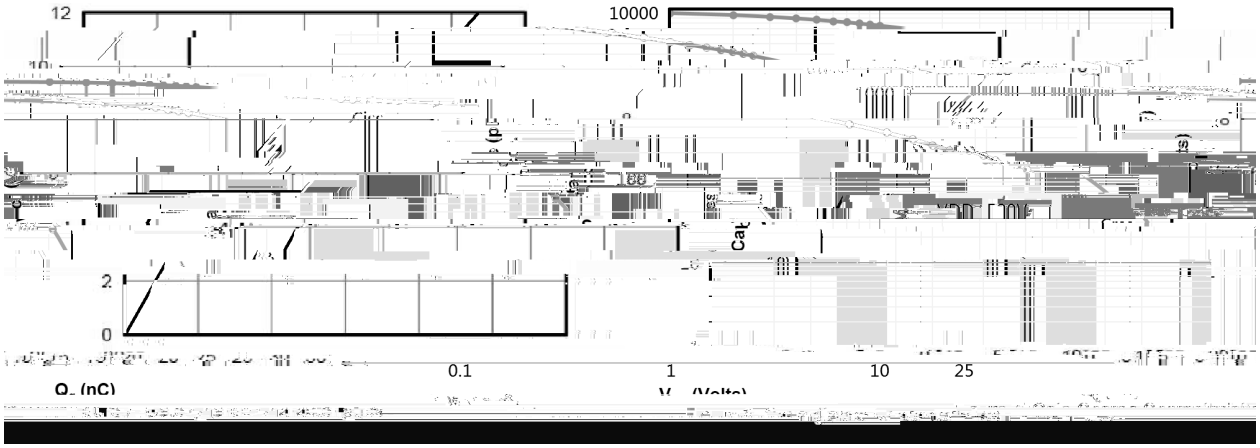
≠ Ǝ ÃʹE ℵ ƒ / Electrical Characteristic Curve

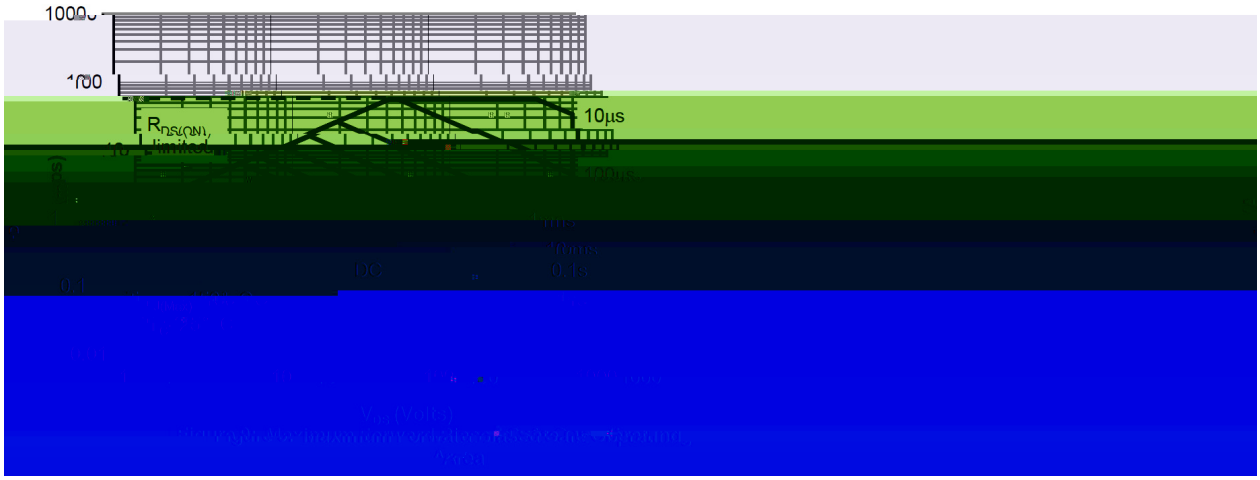


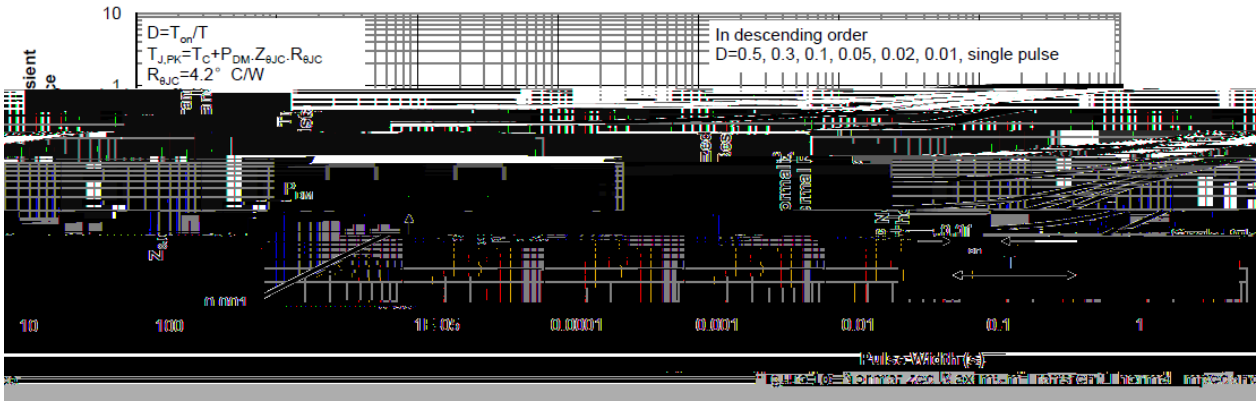




≠ Ǝ ÃʹE ᛋ ƒ / Electrical Characteristic Curve



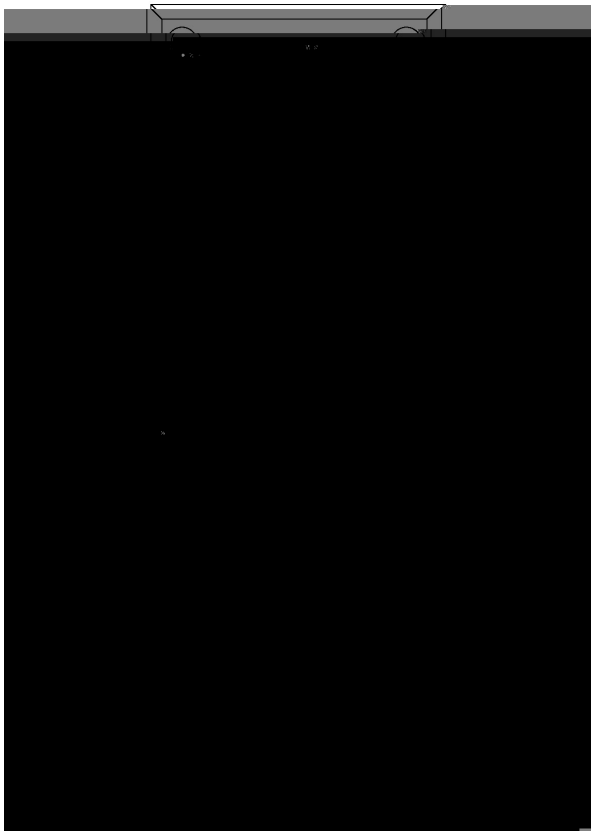




BRFL65R280T

Rek 62 62.32a8(.)-4.3(A)51.4( )273.5(Apr)50.9(.)-4.3(-2025

Ł. Ł Ω / Marking Instructions



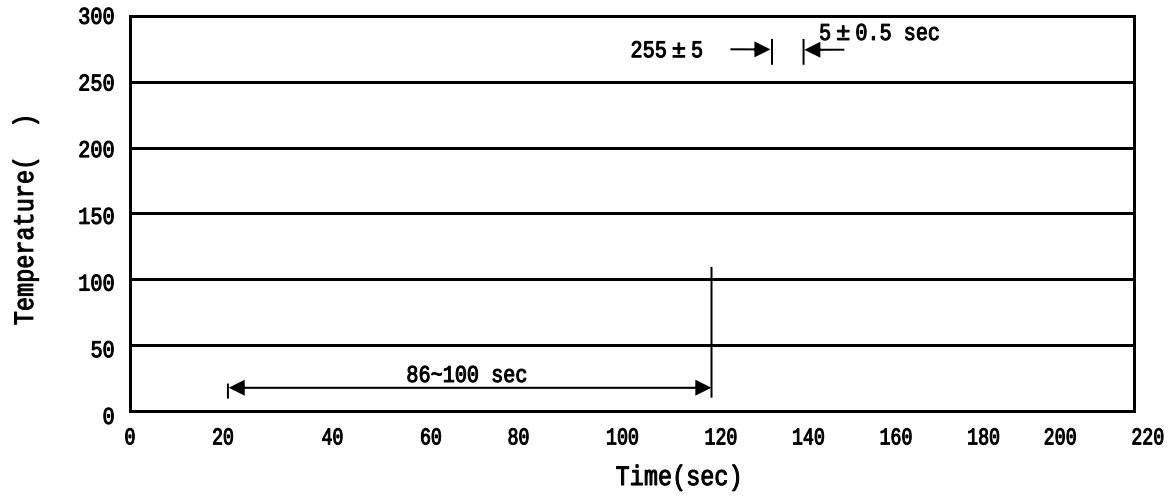
BR

65R280T

****

Note:

↓ ș ╕ẘ´E ᛋ ƒ (ᾠ ᴣ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

1		25	150	60	90sec;
2		255±5			5±0.5sec;
3			2	10	/sec.

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

ᛋ ᵾ ɋ ‾ `Y Ţ / Resistance to Soldering Heat Test Conditions

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

ɒ Ŀ ᾀ — / Packaging SPEC.

/ TUBE

Package Type	Units					Dimension		(unit mm³)
TO-220FL	50	20	1,000	5	5,000	532×33×7.0	555×164×50	575×290×180

ä ᵛ ɻ Ꞙ / Notices