

Descriptions

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

Features

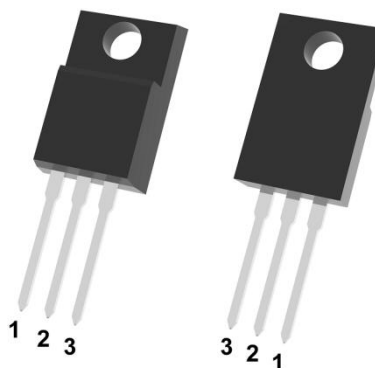
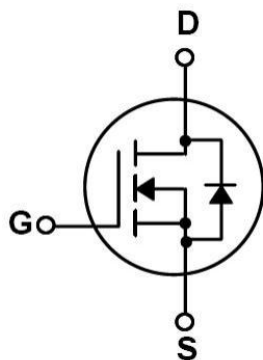
- Very low $R_{DS(on)} \times Q_g$
- 100% avalanche tested
- RoHS compliant

Parameter	Value	Unit
V_{DSS}	650	V
$R_{DS(ON)MAX.} V_{GS}=10V$	280	m Ω
I_D	14	A

Applications

- For switch mode power supply
- uninterruptible power supply
- power factor correction

Equivalent Circuit & Pinning



TO-220FL

PIN1 : G

PIN 2 : D

PIN 3 : S

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DSS}	650	V
Drain Current	I _D (Tc=25°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 (Tc=25°C)	30	W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C
Junction-to-Case	R _{θJC}	4.2	°C/W
Junction-to-Ambient	R _{θJA}	65	°C/W

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	650			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V V _{GS} =0V T _J =25°C			1.0	μA
Gate-Body Leakage Current, Forward	I _{GSS}	V _{GS} =±30V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250μA	2.5	3.0	4.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V I _D =5.5A		220	280	mΩ
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V I _{SD} =1A T _J =25°C			1.2	V
Gate Resistance	R _g	V _{GS} = 0V f = 1.0MHz		14		Ω
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1.0MHz		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 I _D =7.5A R _G =25Ω 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

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_S				14	A
Total Gate Charge	Q_g	$V_{DS}=520V \quad I_D=7.5A$ $V_{GS}=10V$		23.7		nC
Gate-Source Charge	Q_{gs}			4.8		nC
Gate-Drain Charge	Q_{gd}			2.6		nC
Reverse recovery time	t_{rr}	$V_R=400V, \quad I_F=7.5A,$ $di_F/dt=100A/\mu s$		229		ns
Reverse recovery charge	Q_{rr}			2.4		uC

Electrical Characteristic Curve

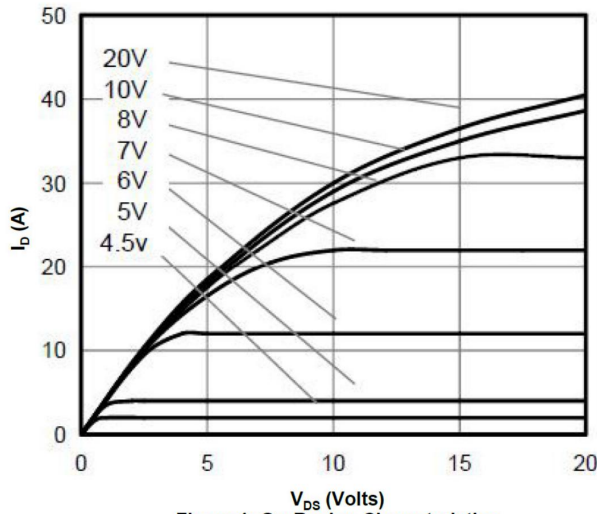


Figure 1: On-Region Characteristics

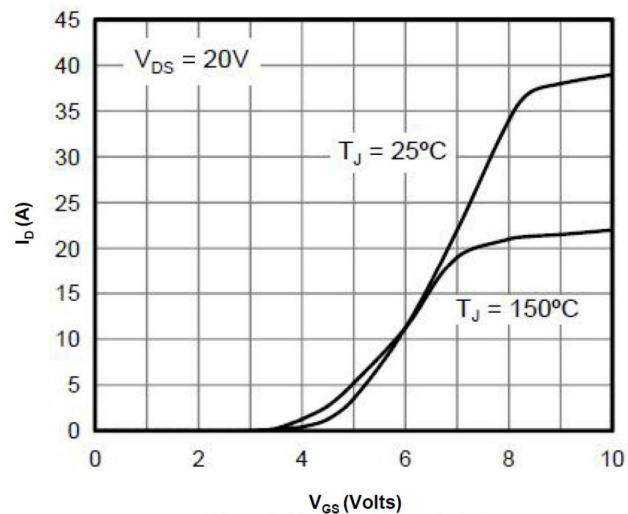


Figure 2: Transfer Characteristics

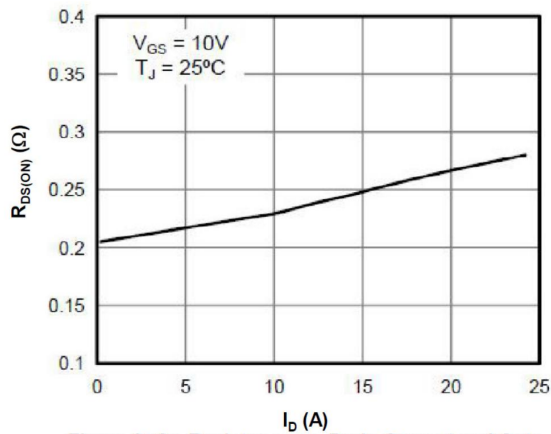


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

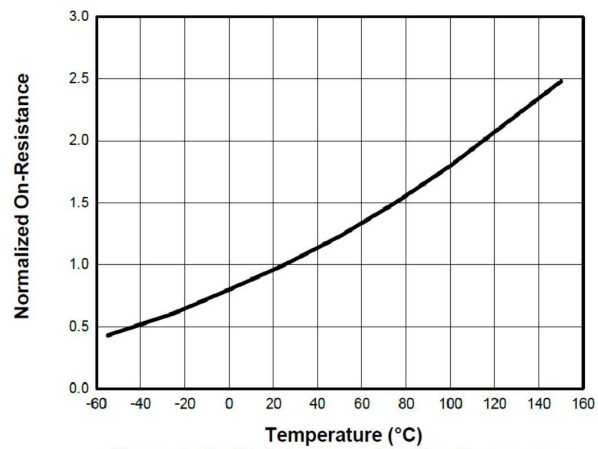


Figure 4: On-Resistance vs. Junction Temperature

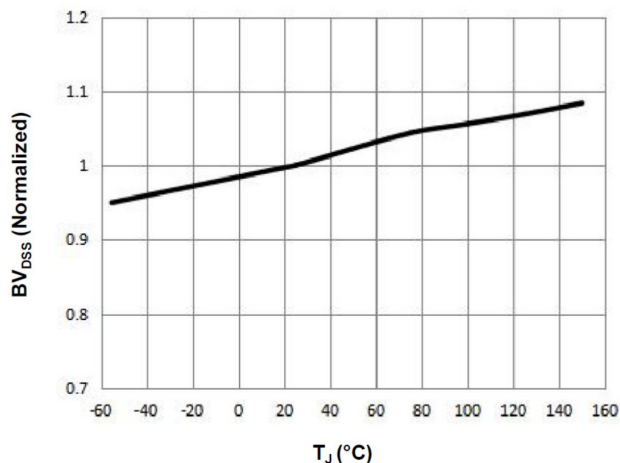


Figure 5: Break Down vs. Junction Temperature

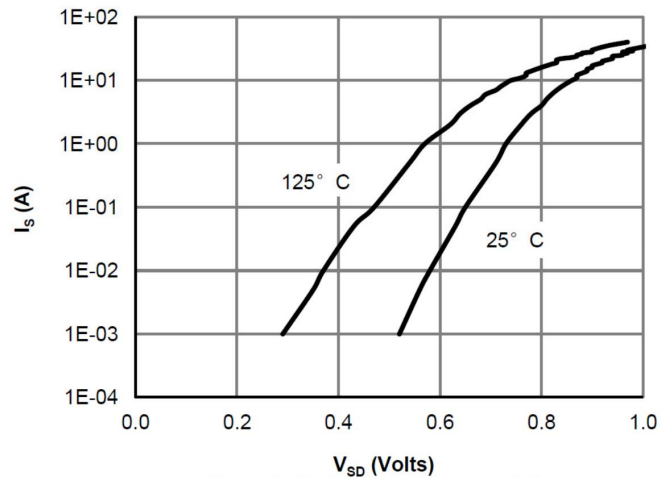
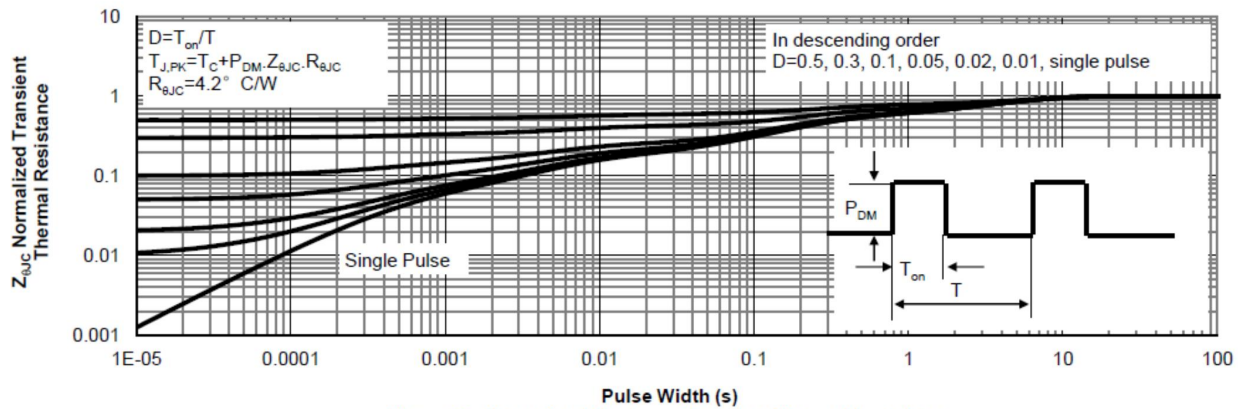
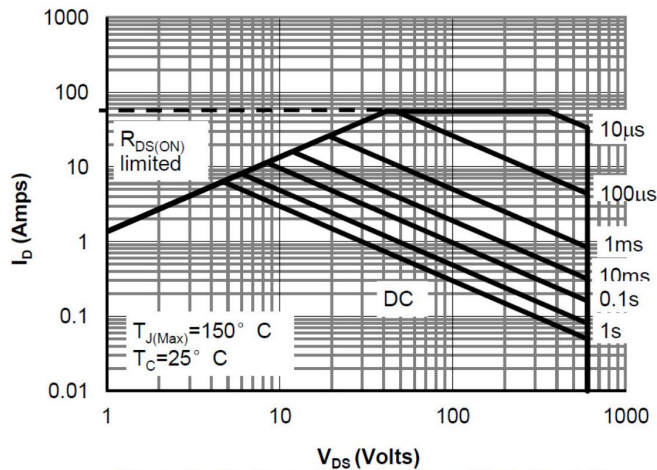
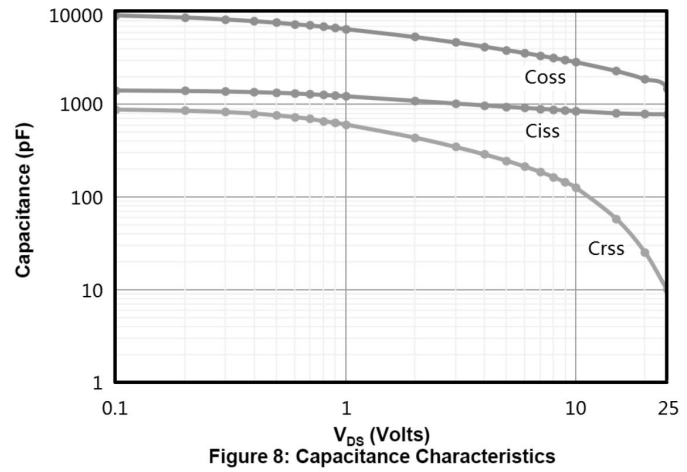
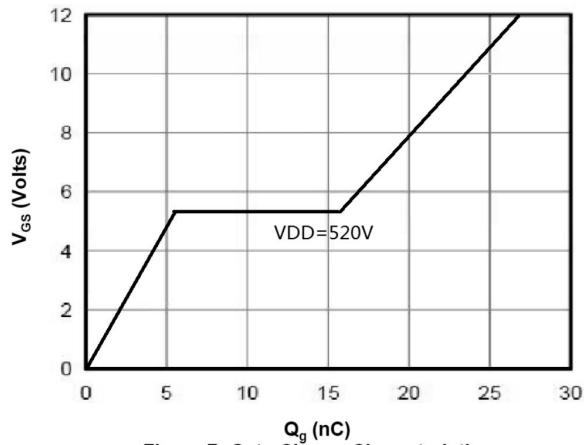
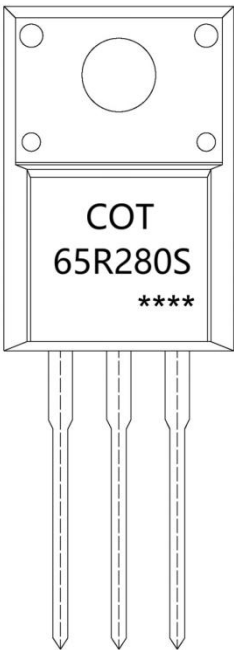


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve



Marking Instructions



Note:
COT: Company Code
65R280S: Product Type Code
****: Lot No. Code, code change with Lot No

Packaging SPEC

TUBE

Package Type	Units					Dimension (unit: mm³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-220FL	50	20	1000	5	5000	532×33×7.0	555×164×50	575×290×180

Package Outline Dimensions

T□-220FL 单位: mm

