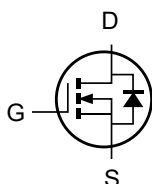
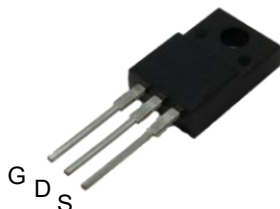


700V N-Channel Power MOSFET

MPR15N70CTF
TO-220F



Features

- Low gate Charge (typical 53nC)
- Low Crss (typical 3.1pF)
- Fast switching capability
- 100% avalanche tested
- Improved dv/dt capability
- Halogen free and RoHS compliant

Application

- Switch Mode Power Supply
- Uninterruptible Power Supply (UPS)
- TV Power
- A dapter/Charger

Maximum ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter		Rating	Unit
V(BR)DSS	Drain-Source breakdown voltage		700	V
VGS	Gate-Source voltage		±30	V
ID	Continuous drain current ①	T _C =25°C	15	A
		T _C =100°C	9	A
ID,pulse	Pulsed Drain Current ②		60	A
EAS	Avalanche energy, single pulsed ③		1125	mJ
dv/dt	Peak Diode Recovery dv/dt ④		5	V/ns
PD	Power Dissipation		59	W
TSTG,TJ	Storage and Junction Temperature Range		-55 to 150	°C

NOTE: ① Limited by maximum junction temperature.

② Repetitive Rating: Pulse width limited by maximum junction temperature.

③ L=10mH, ID=15A, RG=25 Ω , VDD=100V, Start TJ=25 $^\circ\text{C}$.

④ ISD $\leq 15\text{A}$, di/dt $\leq 100\text{A}/\mu\text{s}$, VDD $\leq \text{BVDSS}$, Start TJ=25 $^\circ\text{C}$.

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	2.09	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
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Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)

V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	700	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =700V, V _{GS} =0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±30V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2	--	4	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =7.5A	--	0.55	0.65	Ω

Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)

C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	2872	--	pF
C _{oss}	Output Capacitance		--	130	--	pF
C _{rss}	Reverse Transfer Capacitance		--	3.1	--	pF
Q _g	Total Gate Charge	V _{DS} =560V, I _D =15A, V _{GS} =10V	--	53	--	nC
Q _{gs}	Gate-Source Charge		--	15	--	nC
Q _{gd}	Gate-Drain Charge		--	16	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =350V, I _D =15A, R _G =25Ω, T _j =25°C	--	31	--	ns
Tr	Turn-on Rise Time		--	47	--	ns
Td(off)	Turn-Off Delay Time		--	63	--	ns
Tf	Turn-Off Fall Time		--	45	--	ns

Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)

I _S	Maximum Continuous Drain to Source Diode Forward Current		--	--	15	A
I _{SM}	Pulsed Diode Forward Current		--	--	60	A
V _{SD}	Forward on voltage	I _{SD} =15A, V _{GS} =0V	--	--	1.2	V
T _{rr}	Reverse Recovery Time	I _F =15A, V _R =400V di/dt=100A/μs	--	528	--	ns
Q _{rr}	Reverse Recovery Charge		--	4.84	--	μC

Typical Characteristics

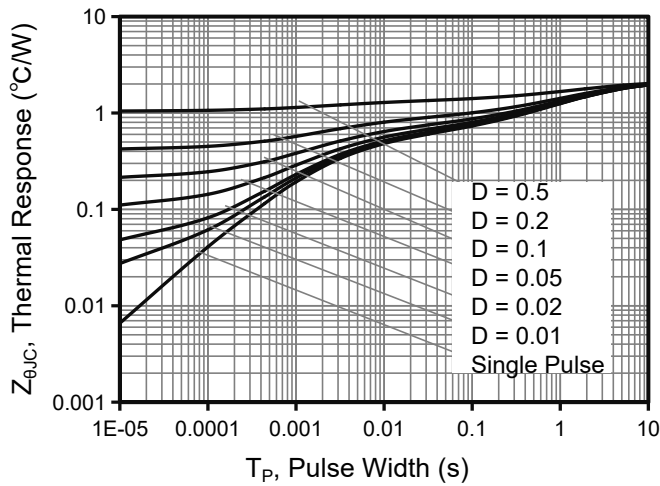


Figure 1. Transient Thermal Impedance For TO-220F

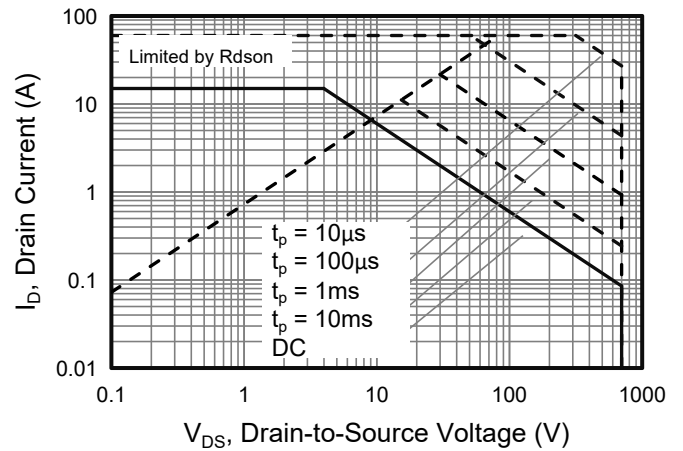


Figure 2. Safe Operation Area For TO-220F

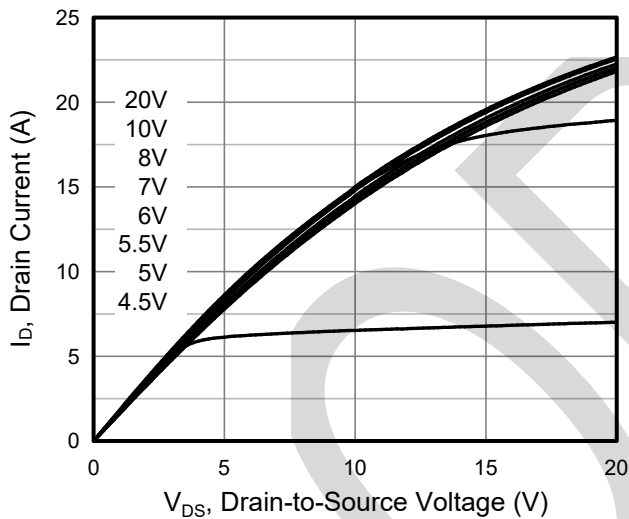


Figure 3. Output Characteristics

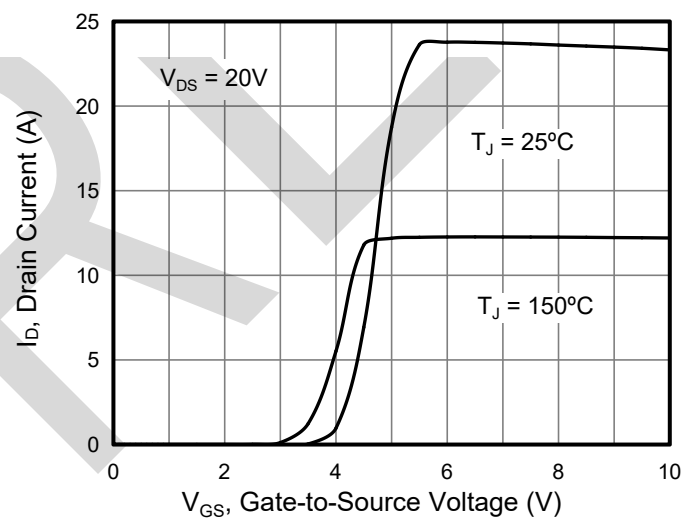


Figure 4. Transfer Characteristics

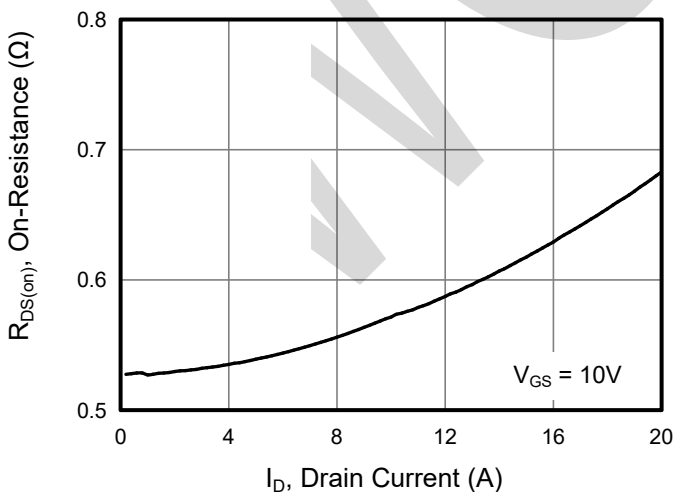


Figure 5. On-Resistance vs Drain Current

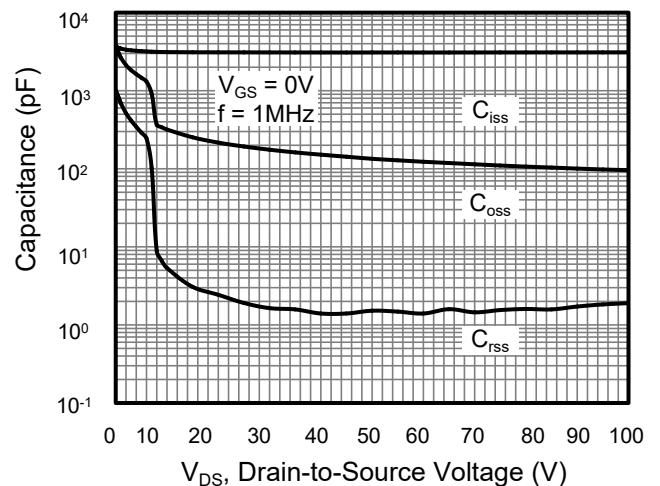


Figure 6. Capacitance

Typical Characteristics

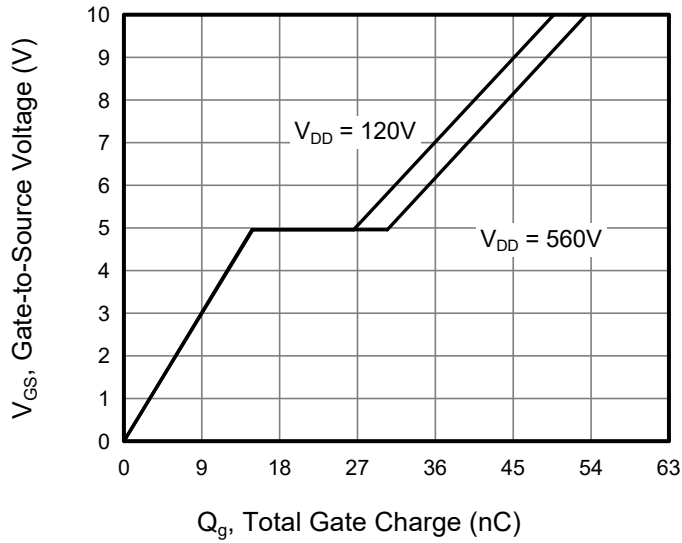


Figure 7. Gate Charge

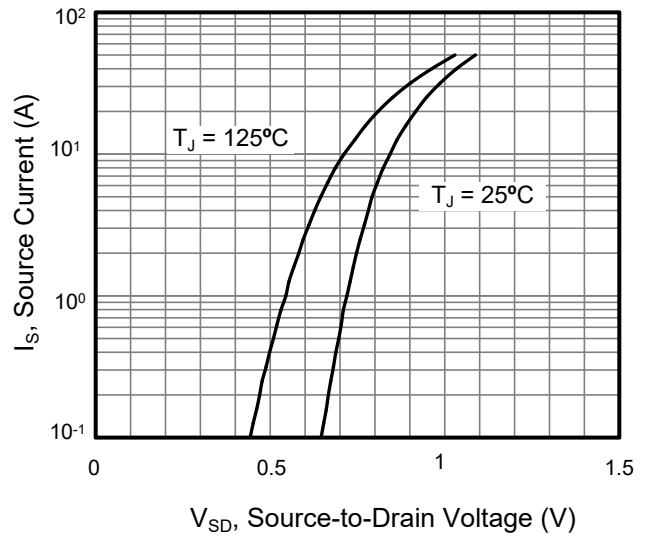


Figure 8. Body Diode Forward Voltage

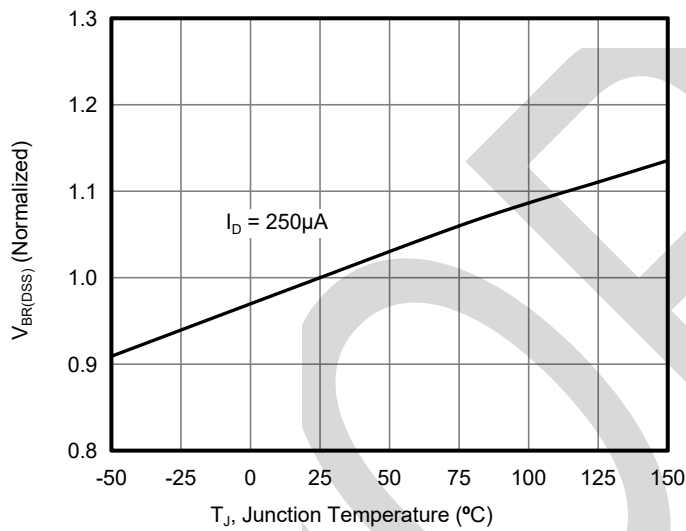


Figure 9. Breakdown Voltage vs Junction Temperature

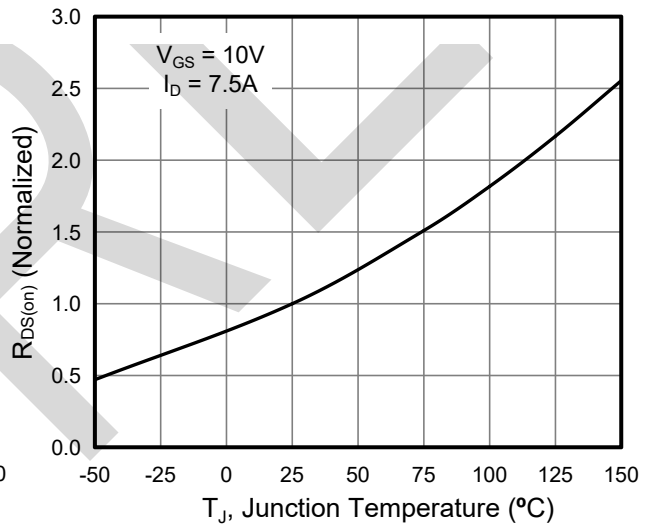
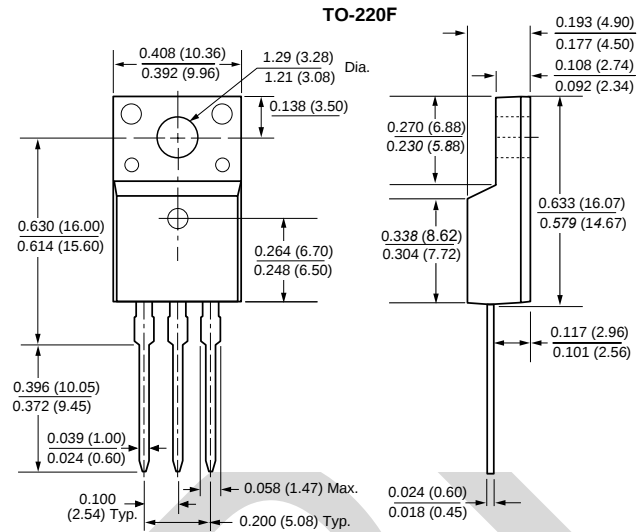


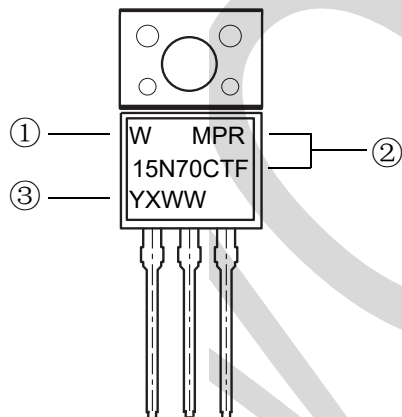
Figure 10. On-Resistance vs Temperature

PACKAGE OUTLINE DIMENSIONS

Note:unit mm



Marking Information



- ① W : Company's trademark
- ② Product model : MPR15N70CTF
- ③ PDC information:

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)