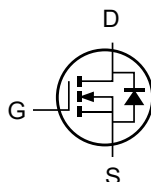
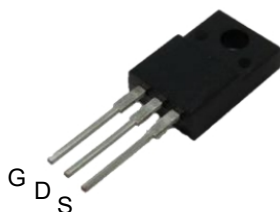


650V N-Channel Power MOSFET

MPR12N65CTF
TO-220F



Features

- Low gate charge
- Low Ciss
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Application

- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)
- AC to DC Converters
- Telecom, Solar

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

Symbol	Parameter	Rating	Unit
V(BR)DSS	Drain-Source breakdown voltage	650	V
VGS	Gate-Source voltage	± 30	V
IAR	Avalanche Current ①	12	A
ID	Continuous drain current @VGS=10V	12	A
IDM	Pulse drain current tested ①	48	A
IS	Continuous Diode Forward Current	12	A
EAS	Avalanche energy, single pulsed ②	320	mJ
EAR	Repetitive Avalanche Energy ①	33	mJ
PD	Power Dissipation	125	W
TSTG,TJ	Storage and Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	1	°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	650	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, 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} =10V, I _D =250μA	2.0	--	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =6A	--	0.65	0.85	Ω
g _{fs}	Forward Transconductance	V _{DS} =15V, I _D =5A	--	10	--	S

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

C _{iss}	Input Capacitance	V _{DD} =25V, V _{GS} =0V, f=1MHz	--	1480	--	pF
C _{oss}	Output Capacitance		--	180	--	pF
C _{rss}	Reverse Transfer Capacitance		--	35	--	pF
Q _g (10V)	Total Gate Charge	V _{DS} =480V, I _D =12A , V _{GS} =10V ③④	--	58	--	nC
Q _{gs}	Gate-Source Charge		--	14	--	nC
Q _{gd}	Gate-Drain Charge		--	32	--	nC

Switching Characteristics

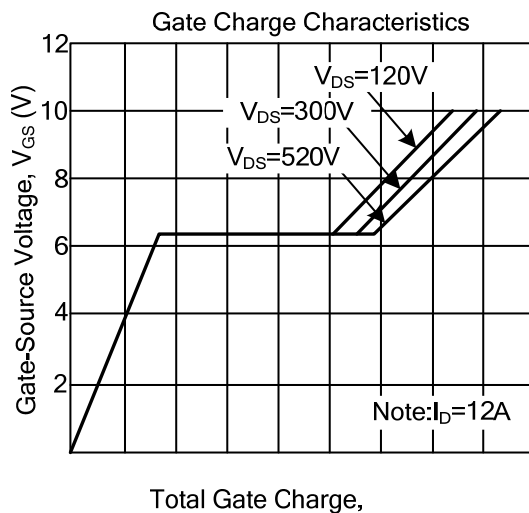
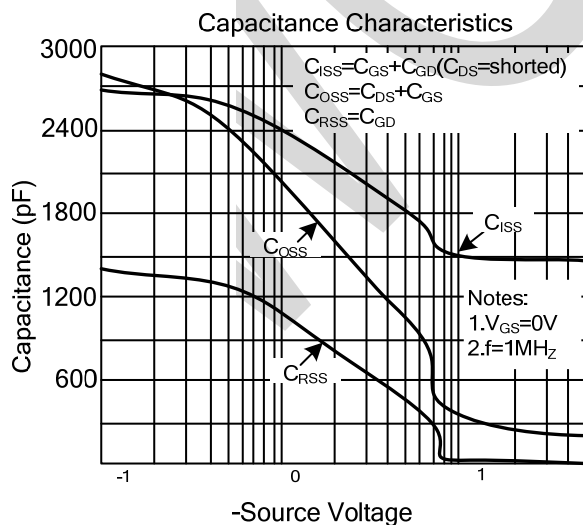
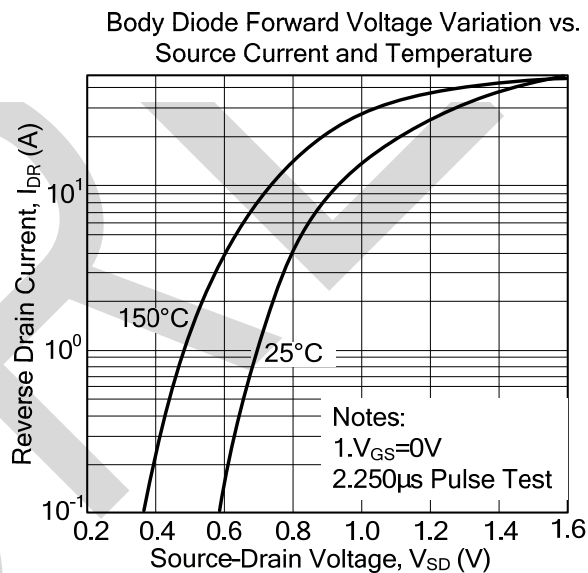
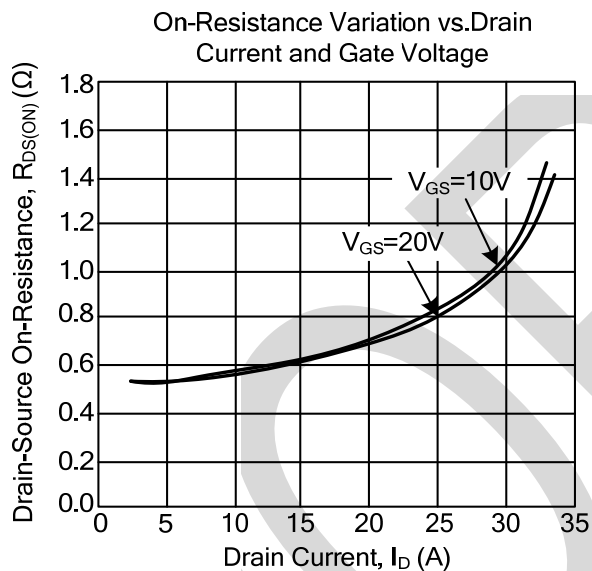
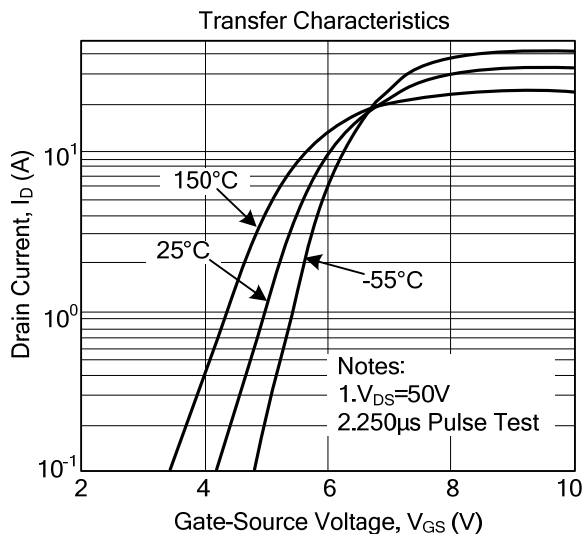
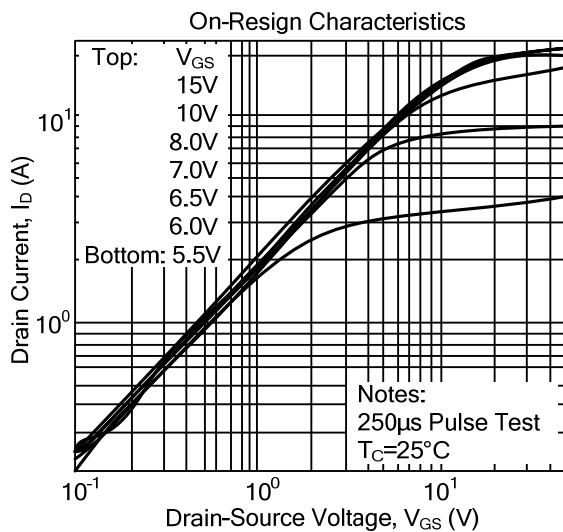
Td(on)	Turn-on Delay Time	V _{DD} =300V, I _D =12A, R _G =4.7Ω, T _J =25°C ③④	--	20	--	ns
Tr	Turn-on Rise Time		--	28	--	ns
Td(off)	Turn-Off Delay Time		--	55	--	ns
Tf	Turn-Off Fall Time		--	30	--	ns

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

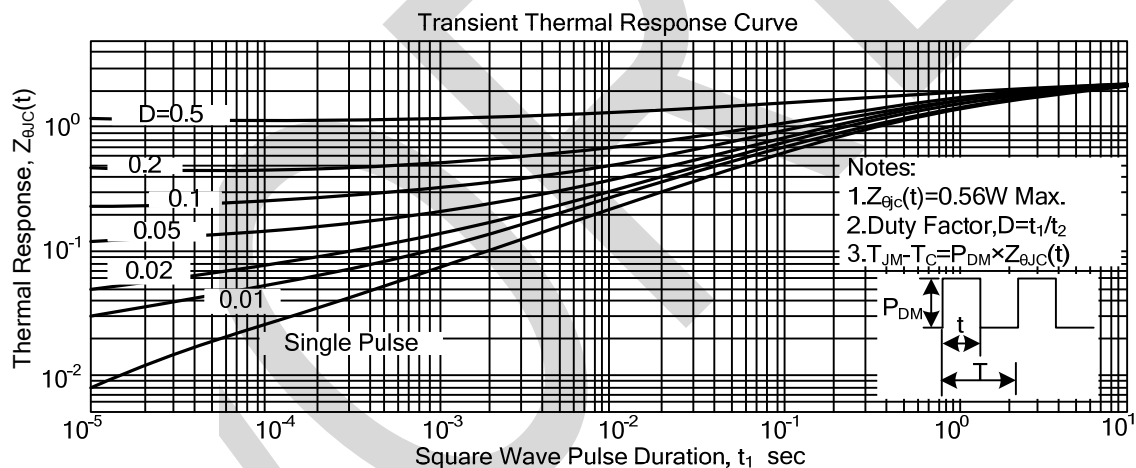
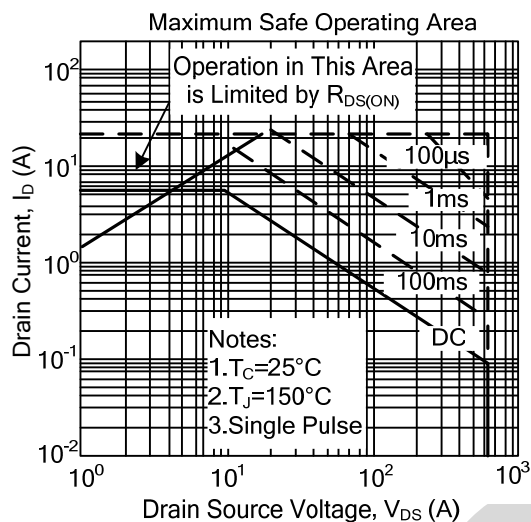
I _{SM}	Pulsed Diode Forward Current		--	--	48	A
V _{SD}	Forward on voltage	I _{SD} =12A, V _{GS} =0V	--	--	1.5	V
T _{rr}	Reverse Recovery Time	I _S = 12A, V _{GS} =0V	--	600	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs ③	--	43	--	μC

NOTE: ① Repetitive rating; pulse width limited by max junction temperature.
 ② V_{DD}=50V,starling,L=12mH,R_G=25Ω,I_{AS}=12A , T_J=25°C.
 ③ Pulse widths≤300us;duty cycles≤2%.
 ④ Repetitive rating; pulse width limited by maximum junction temperature

Typical Characteristics



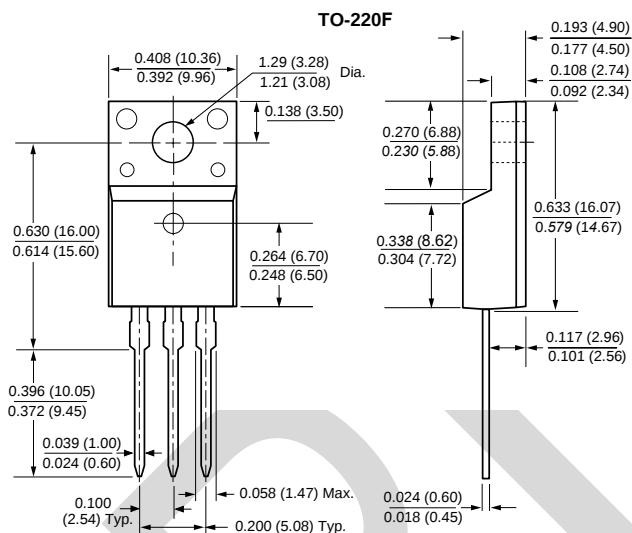
Typical Characteristics



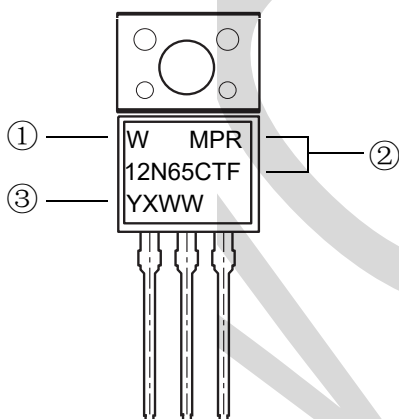
PACKAGE OUTLINE DIMENSIONS

TO-220F Package Information

Note:unit mm



Marking Information



①W : Company's trademark

②Product model : MPR12N65CTF

③PDC information :

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)