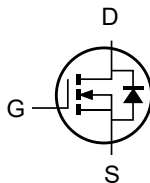
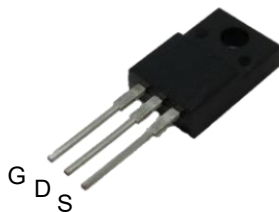


650V N-Channel Power MOSFET

MPR7N65CTF
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
ID	Continuous drain current	7	A
IDM	Pulse drain current tested ①	28	A
EAR	Repetitive Avalanche Energy ①	14	mJ
EAS	Avalanche energy, single pulsed ②	500	mJ
PD	Power Dissipation	48	W
TSTG,TJ	Storage and Junction Temperature Range	-55 to 150	$^\circ\text{C}$

NOTE: ① Repetitive rating; pulse width limited by max junction temperature.

② EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = 100\text{V}$, $R_g = 25\Omega$, $L = 64\text{mH}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	2.6	°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} =V _{GS} , I _D =250μA	2	--	4	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =3.5A	--	1.2	1.5	Ω

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

C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	1107	--	pF
C _{oss}	Output Capacitance		--	97.7	--	pF
C _{rss}	Reverse Transfer Capacitance		--	9.3	--	pF
Q _g	Total Gate Charge	V _{DS} =520V, I _D =7A, V _{GS} =10V	--	23.7	--	nC
Q _{gs}	Gate-Source Charge		--	4.7	--	nC
Q _{gd}	Gate-Drain Charge		--	9	--	nC

Switching Characteristics

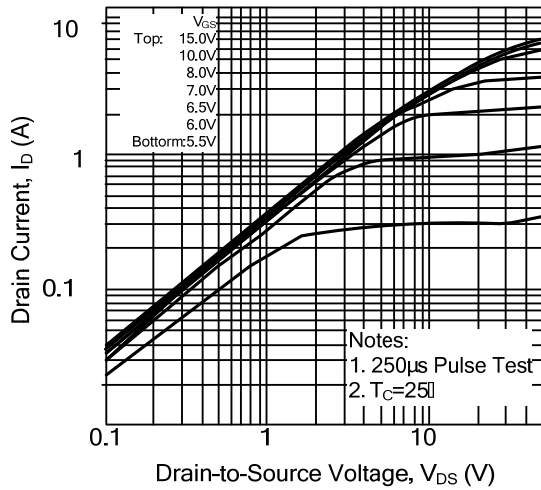
Td(on)	Turn-on Delay Time	V _{DD} =325V, I _D =7A, R _G =25Ω, T _J =25°C	--	15	--	ns
Tr	Turn-on Rise Time		--	18	--	ns
Td(off)	Turn-Off Delay Time		--	80	--	ns
Tf	Turn-Off Fall Time		--	35	--	ns

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

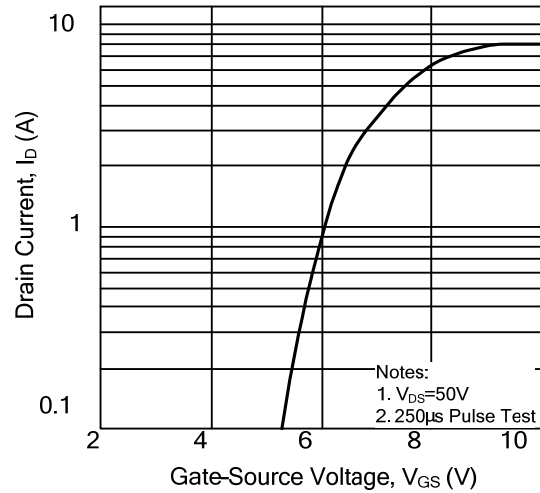
I _S	Maximum Continuous Drain to Source Diode Forward Current	--	--	7	A
I _{SM}	Pulsed Diode Forward Current	--	--	28	A
V _{SD}	Forward on voltage	I _{SD} =7A, V _{GS} =0V	--	--	1.4 V
T _{rr}	Reverse Recovery Time	I _S =7A, V _{GS} =0V di/dt=100A/μs	--	300	ns
Q _{rr}	Reverse Recovery Charge		--	4.1	μC

Typical Characteristics

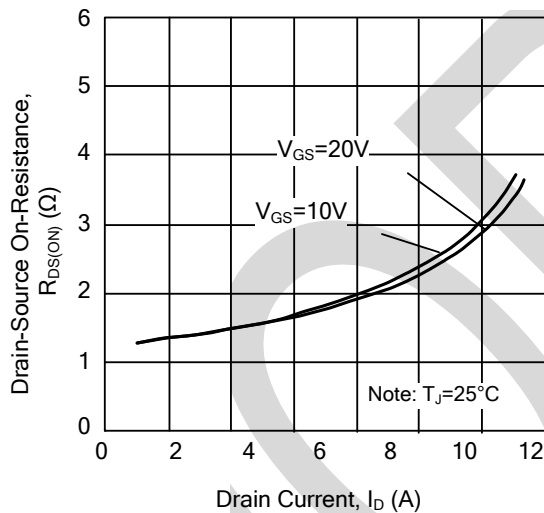
On-State Characteristics



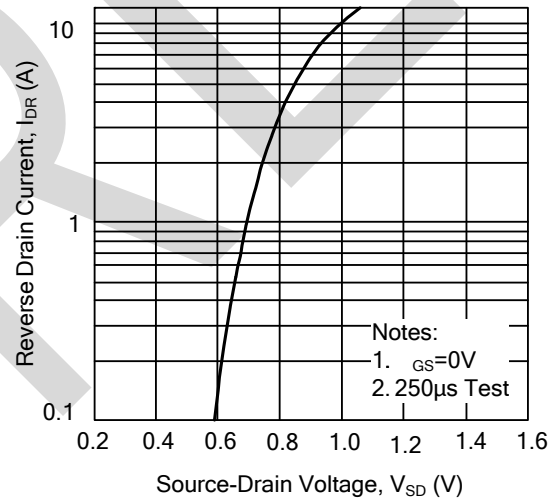
Transfer Characteristics



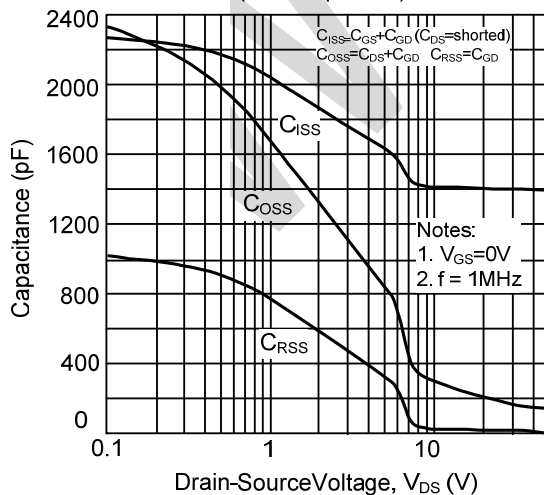
On-Resistance Variation vs. Drain Current and Gate Voltage



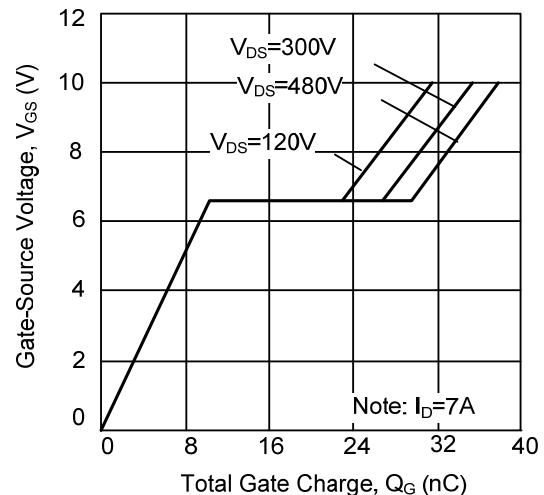
On State Current vs. Allowable Case Temperature



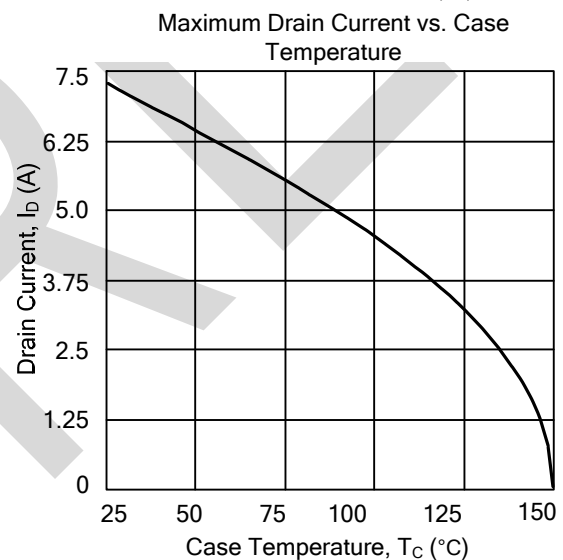
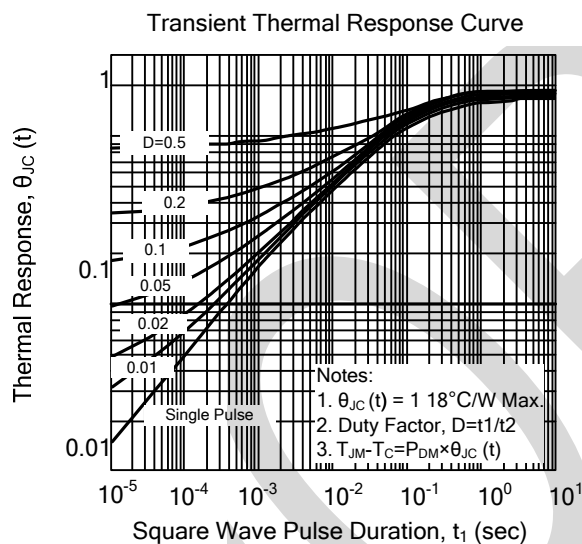
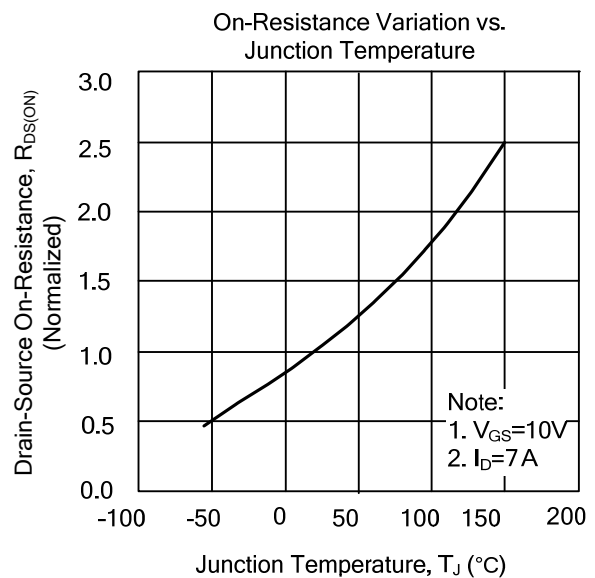
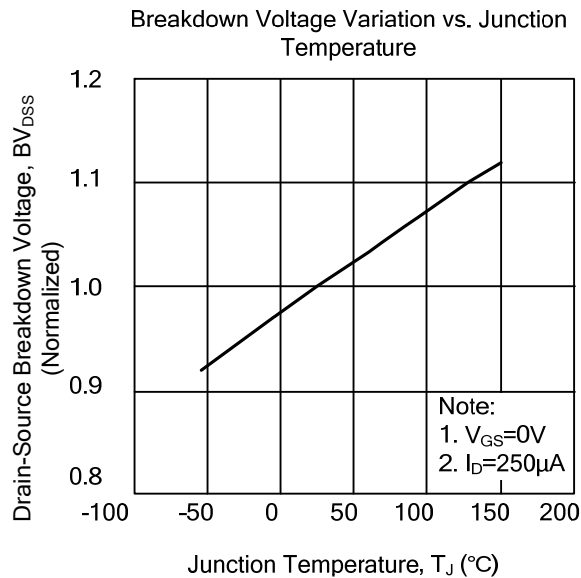
Capacitance Characteristics (Non-Repetitive)



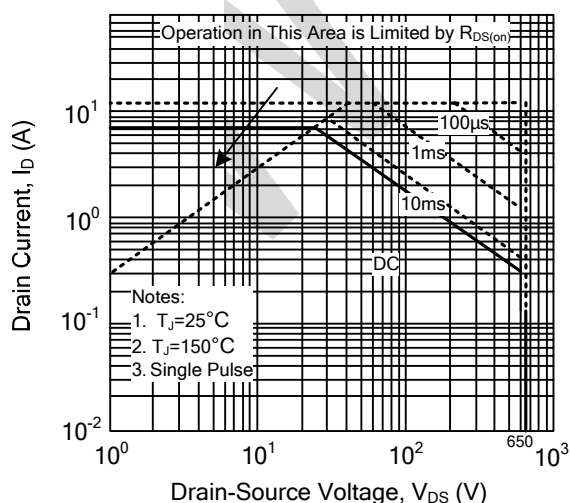
Gate Charge Characteristics



Typical Characteristics

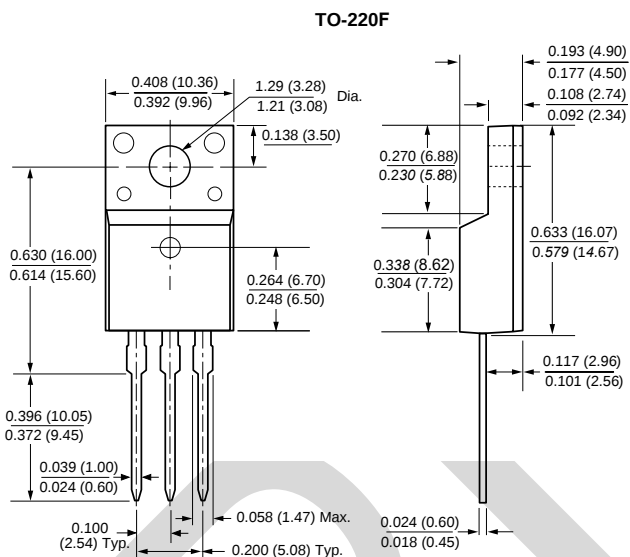


Safe Operating Area - 650V

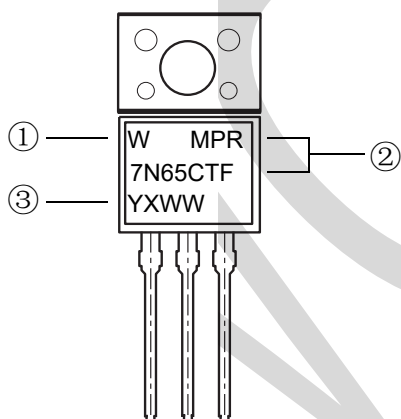


PACKAGE OUTLINE DIMENSIONS

Note:unit mm



Marking Information



- ① W : Company's trademark
- ② Product model : MPR7N65CTF
- ③ PDC information :

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)