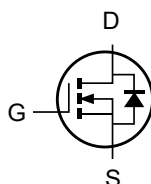
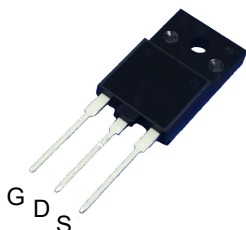


1500V N-Channel Power MOSFET

**MPR3N150F
TO-3PF**



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	MPR3N150F	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	1500	V
V_{GS}	Gate-Source voltage	± 30	V
I_D	Continuous drain current	3	A
I_{DM}	Pulse drain current tested	12	A
EAS	Avalanche energy, single pulsed	500	mJ
P_D	Power Dissipation	35	W
	Derating Factor above 25°C	0.28	W/ $^\circ\text{C}$
T_{STG}, T_J	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Storage Temperature Distance and Storage Temperature Range	300	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	MPR3N150F	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	3.57	°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	1500	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =1500V, V _{GS} =0V	--	--	1	μA
		V _{DS} =1200V, V _{GS} =0V T _j =125°C	--	--	500	
IGSS	Gate-Body Leakage Current	V _{GS} =±30V, V _{DS} =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.5	--	4.5	V
RDS(on)	Drain-Source On-State Resistance	V _{GS} =10V, I _D =2A	--	5.4	8.2	Ω
gfs	Forward Transconductance	V _{DS} =15V, I _D =3A	--	3	--	S

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

C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	1600	--	pF
C _{oss}	Output Capacitance		--	33	--	pF
C _{rss}	Reverse Transfer Capacitance		--	100	--	pF
Q _g	Total Gate Charge	V _{DD} =750V, I _D =3A, V _{GS} =0V to 10V	--	36	--	nC
Q _{gs}	Gate-Source Charge		--	9.5	--	nC
Q _{gd}	Gate-Drain Charge		--	12	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =750V, I _D =3A, R _G =4.7Ω, V _{GS} =10V	--	25	--	ns
Tr	Turn-on Rise Time		--	48	--	ns
Td(off)	Turn-Off Delay Time		--	57	--	ns
Tf	Turn-Off Fall Time		--	52	--	ns

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

I _{SM}	Pulsed Diode Forward Current		--	--	12	A
V _{SD}	Forward on voltage	I _S =3A, V _{GS} =0V	--	--	1.5	V
T _{rr}	Reverse Recovery Time	I _F =I _S , V _{GS} =0V	--	400	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	--	1.1	--	uC

Typical Characteristics

Figure 1. Maximum Transient Thermal Impedance

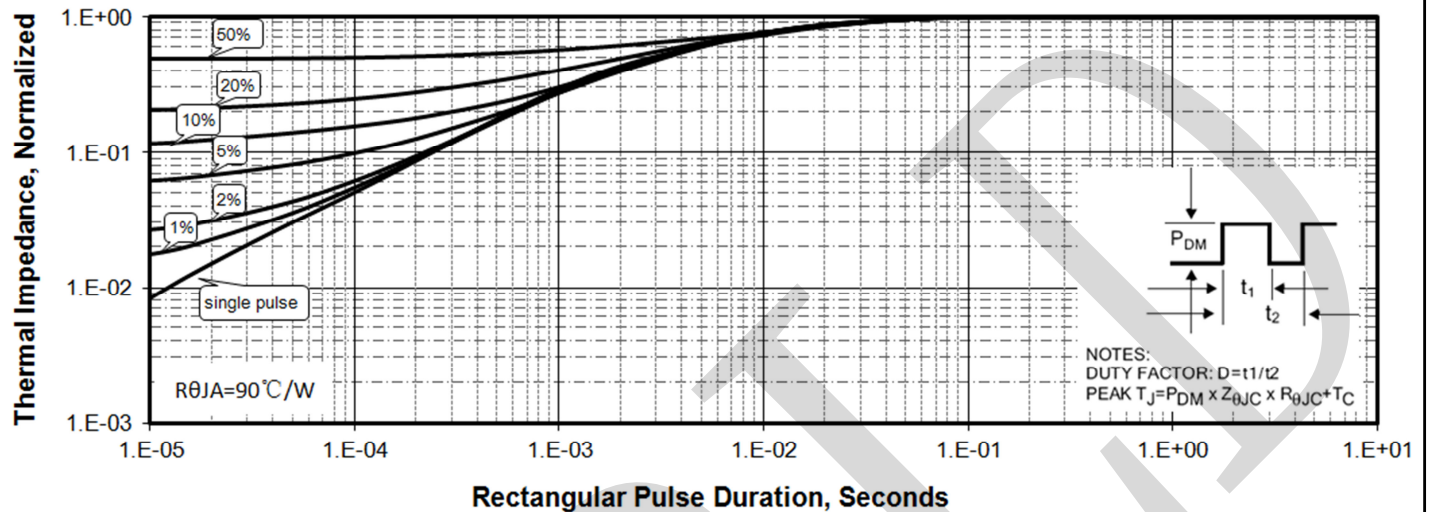


Figure 2 . Max. Power Dissipation vs Case Temperature

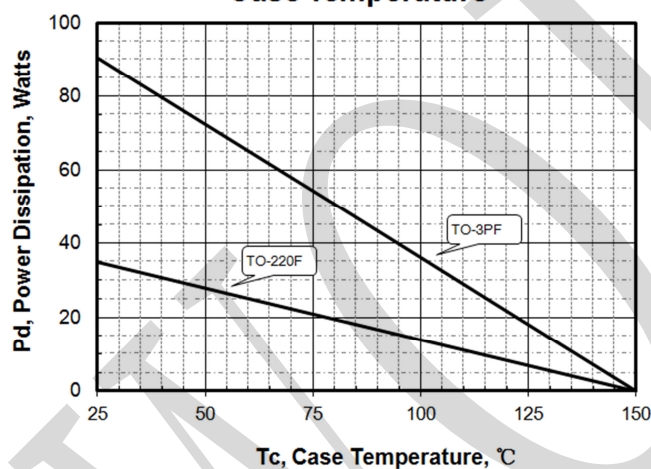


Figure 3 .Maximum Continuous Drain Current vs Tc

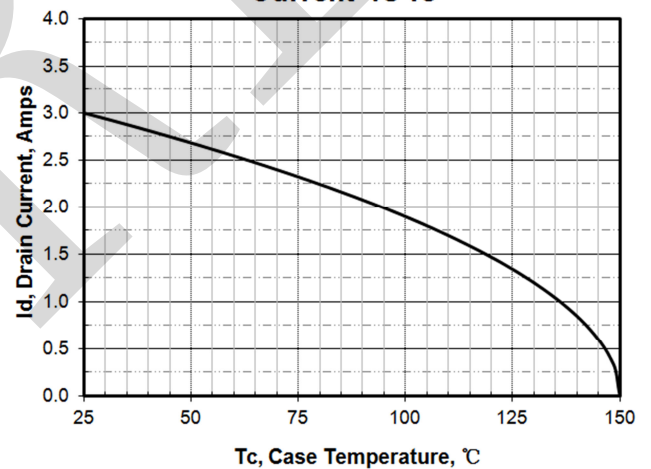


Figure 4. Output Characteristics

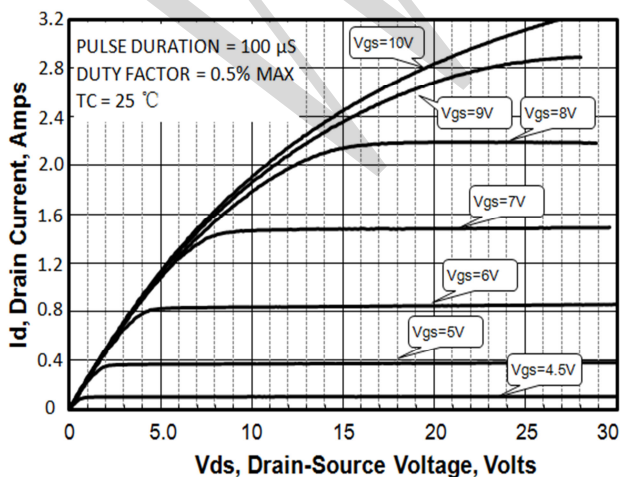
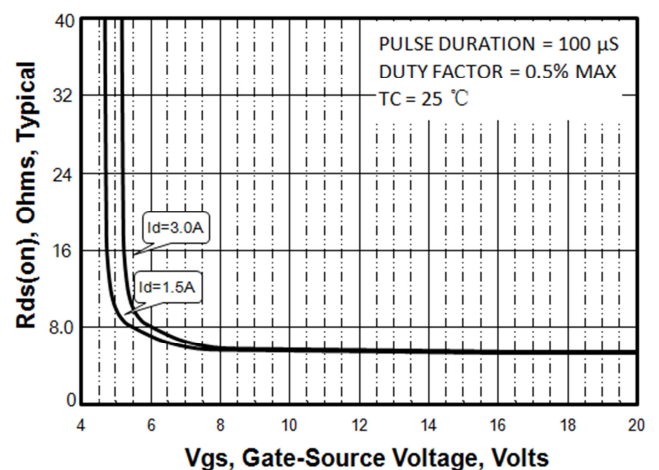


Figure 5. Rdson vs Gate Voltage



Typical Characteristics

Figure 6. Peak Current Capability

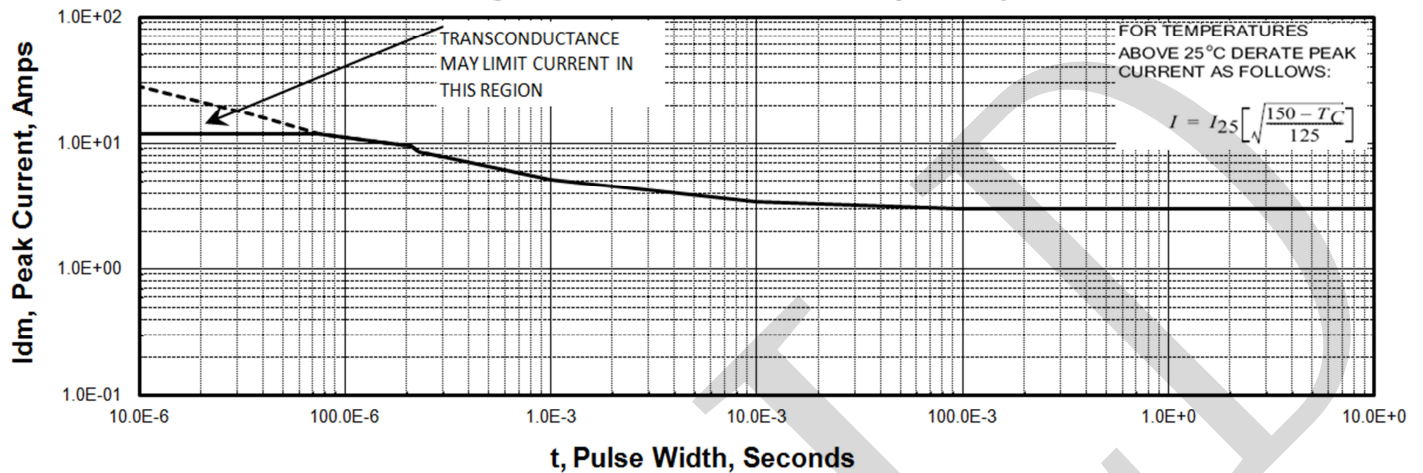


Figure 7. Transfer Characteristics

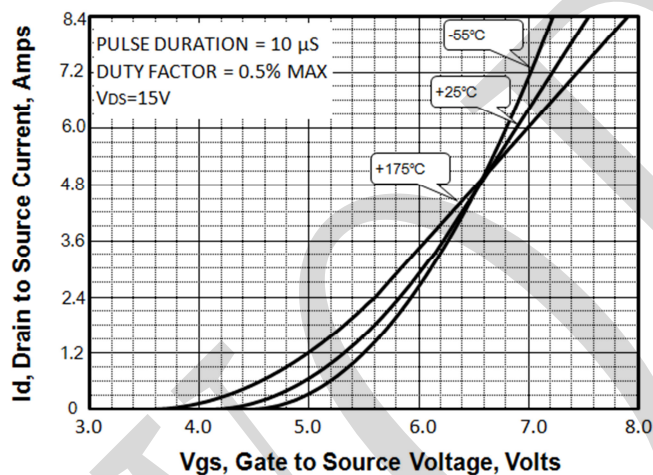


Figure 8. Unclamped Inductive Switching Capability

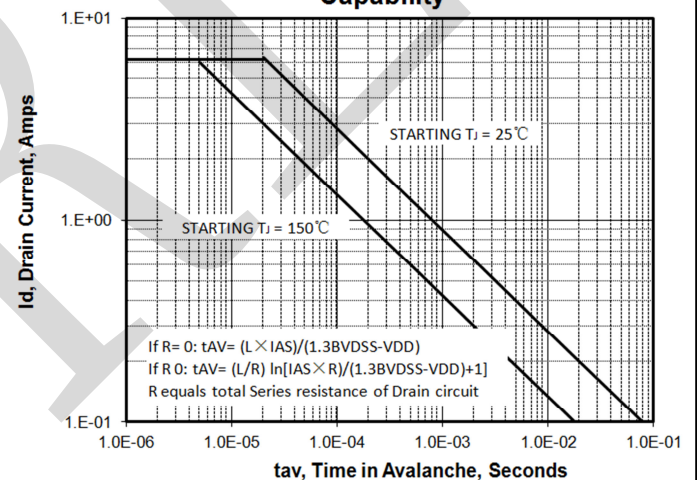


Figure 9. Drain to Source ON Resistance vs Drain Current

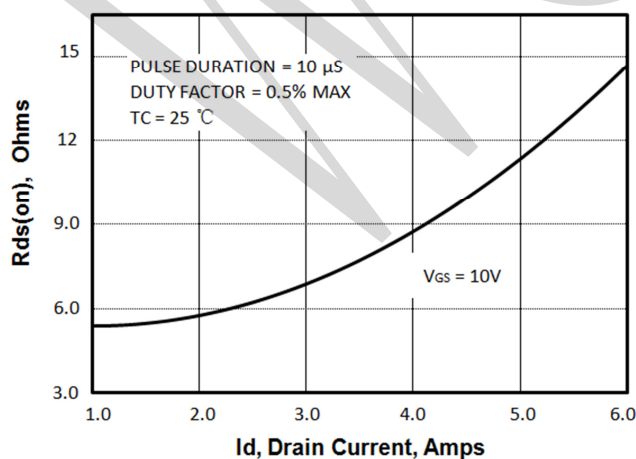
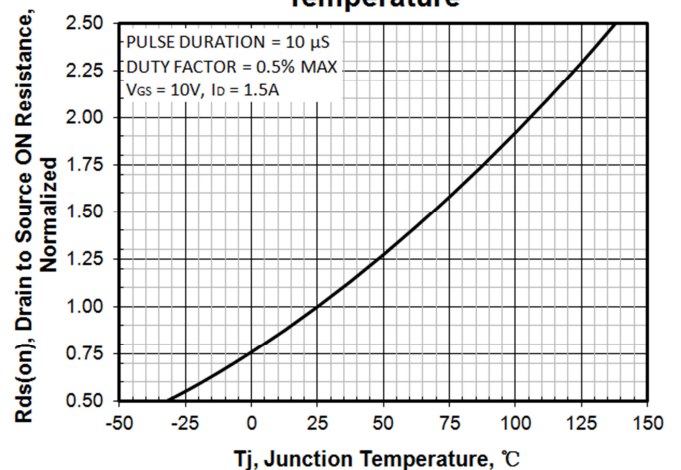


Figure 10. Rds(on) vs Junction Temperature



Typical Characteristics

Figure 11. Breakdown Voltage vs Temperature

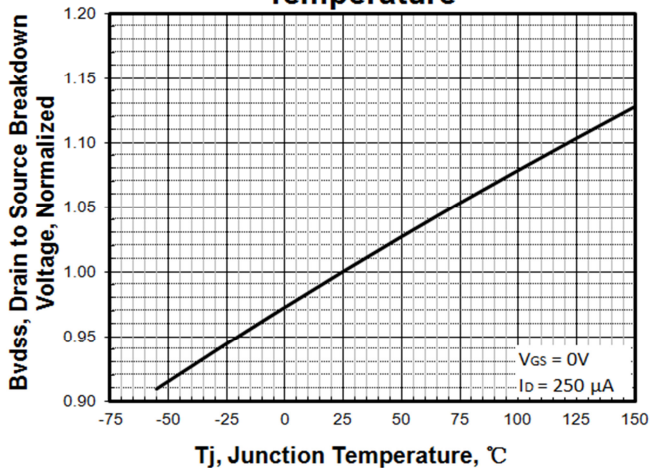


Figure 12. Threshold Voltage vs Temperature

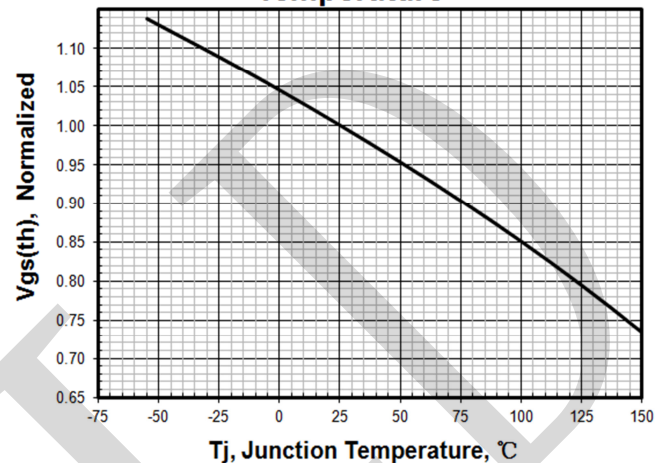


Figure 13 . Maximum Safe Operating Area(TO-3PF)

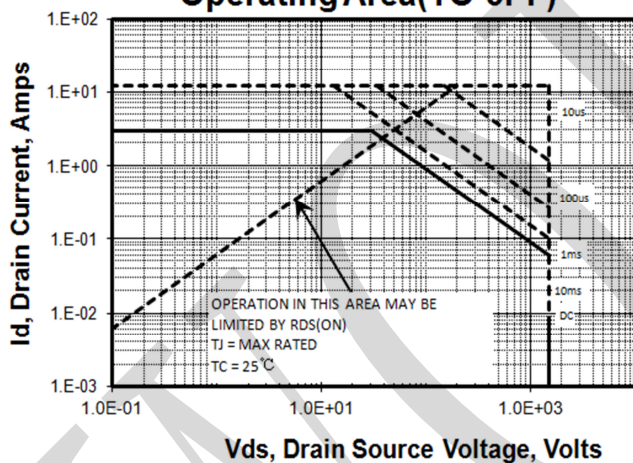


Figure 14 . Maximum Safe Operating Area(TO-220F)

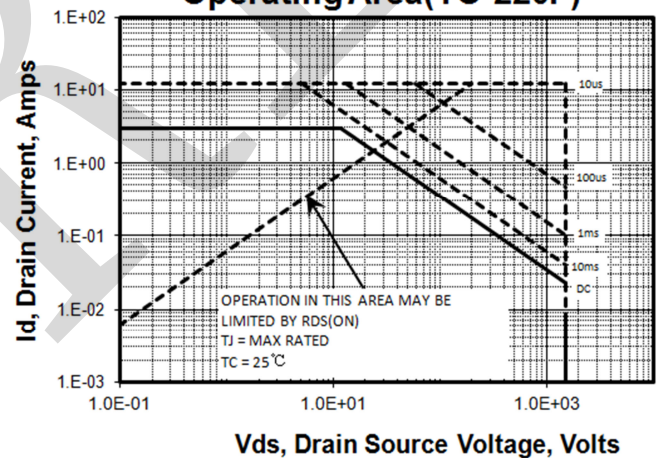


Figure 15. Capacitance vs Vds

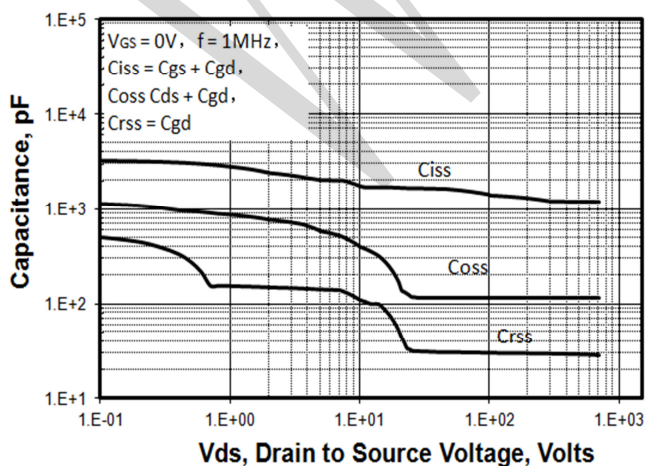
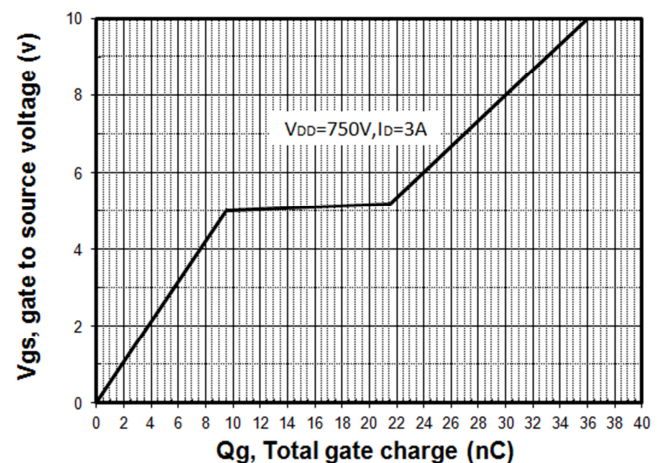


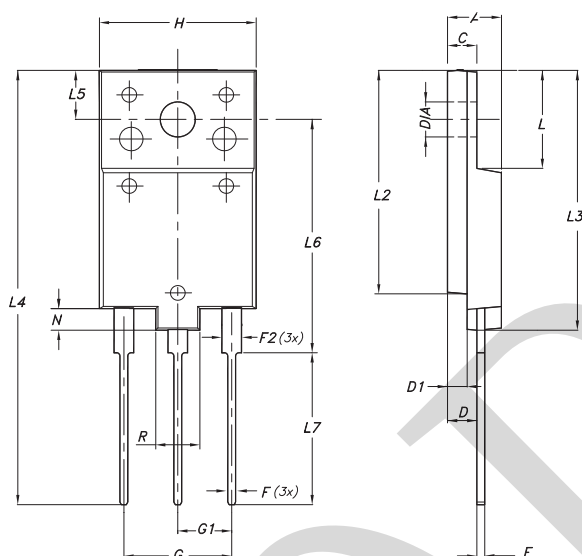
Figure 16 . Typical Gate Charge



PACKAGE OUTLINE DIMENSIONS

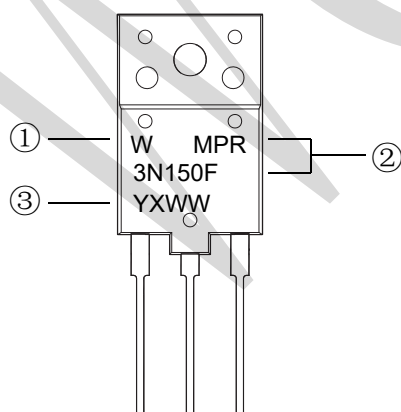
TO-3PF Package Information

Note:unit mm



Dim.	mm		
	Min.	Typ.	Max.
A	5.30		5.70
C	2.80		3.20
D	3.10		3.50
D1	1.80		2.20
E	0.80		1.10
F	0.65		0.95
F2	1.80		2.20
G	10.30		11.50
G1		5.45	
H	15.30		15.70
L	9.80	10	10.20
L2	22.80		23.20
L3	26.30		26.70
L4	43.20		44.40
L5	4.30		4.70
L6	24.30		24.70
L7	14.60		15
N	1.80		2.20
R	3.80		4.20
Dia	3.40		3.80

Marking Information



- ① W : Company's trademark
- ② Product model : MPR3N150F
- ③ PDC information:

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)