World
Internation
(China) Limited

MPR8N90CT

10-JUN-2019

900V N-Channel Power MOSFET

TO-220AB
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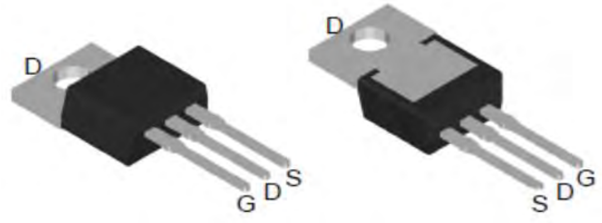
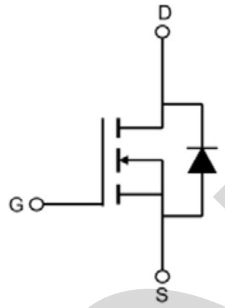




V_{DS}	900	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	1.2	Ω
I_D	8	A

Features

1、Low on – resistance
2、Package TO-220AB
3、TrenchFET Power MOSFET
4、Halogen free

Applications

1、Load Switch for Portable Devices
2、DC/DC Converter

Maximum ratings, at T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		900	V
V_{GS}	Gate-Source voltage		±30	V
I_S	Diode continuous forward current	T_C =25°C	--	A
I_D	Continuous drain current @VGS=10V	T_C =25°C	8	A
		T_C =100°C	5	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	25	A
EAS	Avalanche energy, single pulsed ②		850	mJ
P_D	Maximum power dissipation	T_C =25°C	147	W
T_{STG},T_J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.85	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	°C/W

Electrical Characteristics

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

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	900	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=900V,V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±30V,V_{DS}=0V	--	--	±10	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2.7	3.5	4.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance ④	V_{GS}=10V, I_D=4A	--	1.2	1.5	Ω
g_{FS}	Forward Transconductance	V_{ds}=50V, I_D=4A	--	5.5	--	s

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

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz	--	1600	--	pF
C_{oss}	Output Capacitance		--	130	--	pF
C_{rss}	Reverse Transfer Capacitance		--	12	--	pF
Q_g (10V)	Total Gate Charge	V_{DS}=50V,I_D=1.3A , V_{GS}=10V	--	54	--	nC
Q_{gs}	Gate-Source Charge		--	12	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DD}=30V, I_D=0.5A, R_G=25Ω, Tj=25°C	--	95	--	ns
Tr	Turn-on Rise Time		--	220	--	ns
Td(off)	Turn-Off Delay Time		--	275	--	ns
Tf	Turn-Off Fall Time		--	175	--	ns

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

I_S	Source-Drain Current		--	--	8.0	A
I_{SM}	Source-Drain Current (Pulsed)		--	--	32	A
V_{SD}	Forward on voltage	ISD=8A,VGS=0V	--	--	1.4	V

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

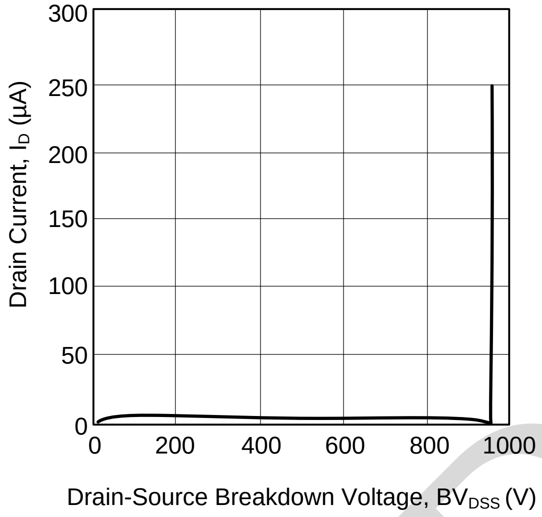
② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH, R_G = 25Ω, I_{AS} = 9A, V_{GS} =10V. Part not recommended for use above this value

③ The power dissipation P_{DSM} is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C.

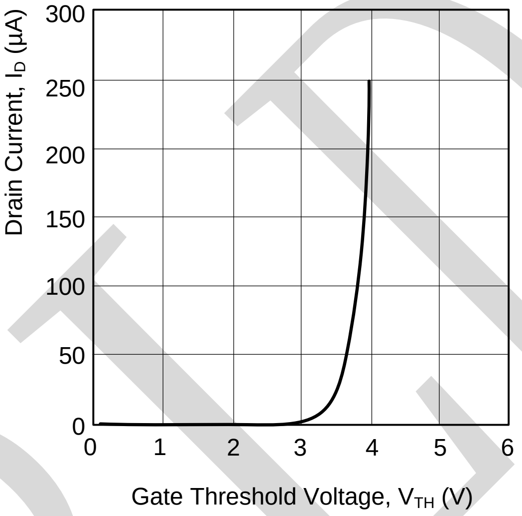
④ Pulse width ≤ 380μs; duty cycle≤ 2%.

Typical Characteristics

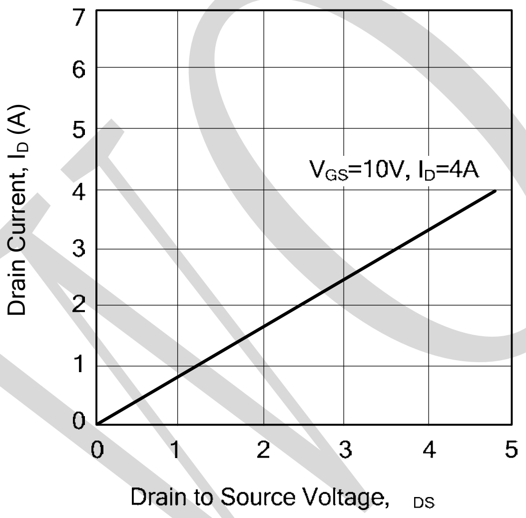
Drain Current vs. Drain-Source Breakdown Voltage



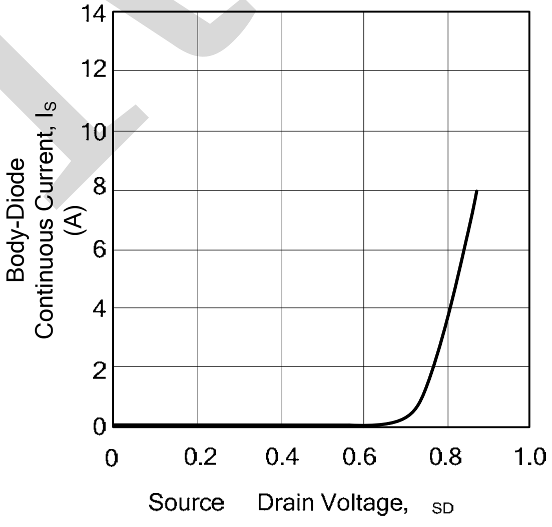
Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics

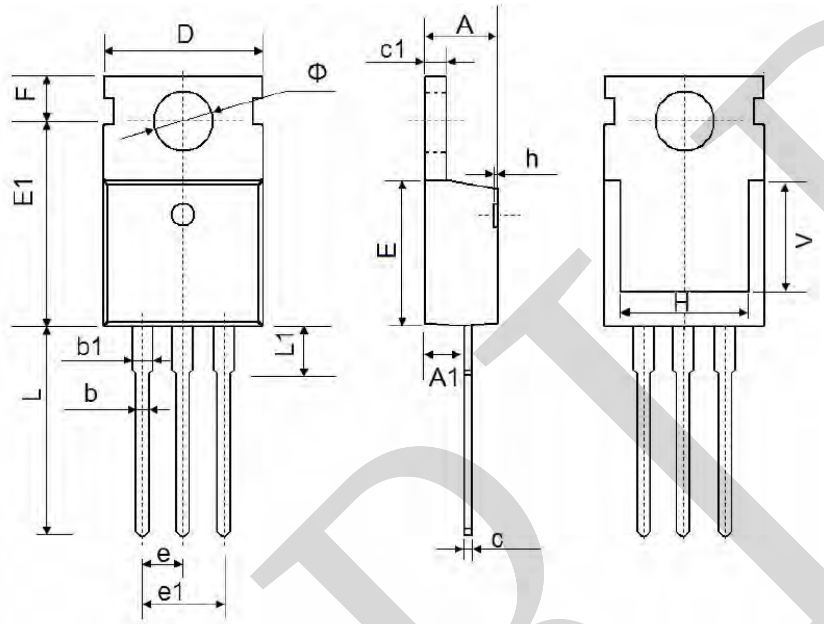


Body-Diode Continuous Current vs. Source to Drain Voltage



PACKAGE OUTLINE DIMENSIONS

TO-220AB



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.9500	9.750	0.352	0.384
E1	12.650	12.950	0.498	0.510
e	2.540 Typ.		0.100 Typ.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	7.500 Ref.		0.295 Ref.	
Φ	3.400	3.800	0.134	0.150