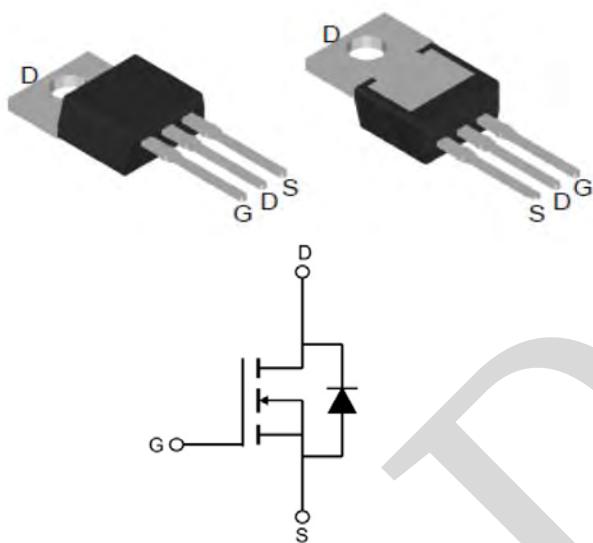


Trench N-channel Power MOSFET

TO-220AB
MSR007N07CT



V_{DS}	67	V
$R_{DS(on),TYP@ V_{GS}=10V}$	6.55	mΩ
I_D	70	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 $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter		Rating	Unit
V(BR)DSS	Drain-Source breakdown voltage		67	V
VGS	Gate-Source voltage		±20	V
dv/dt	Peak Diode Recovery Voltage		9.8	V/ns
ID	Continuous drain current @VGS=10V	Tc =25°C	70	A
		Tc =100°C	48	A
IDM	Pulse drain current tested ①	Tc =25°C	260	A
EAS	Avalanche energy, single pulsed ②		300	mJ
PD	Maximum power dissipation	Tc =25°C	64	W
TSTG,TJ	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	2.34	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	62	°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	67	68	71	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =75V, V _{GS} =0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	--	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance ④	V _{GS} =10V, I _D =30A	--	6.55	7.0	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1MHz	--	2873	--	pF
C _{oss}	Output Capacitance		--	252	--	pF
C _{rss}	Reverse Transfer Capacitance		--	205	--	pF
g _{fs}	Forward Transconductance	V _{DS} = 10 V, I _D = 15A	15	--	--	S
Q _g (10V)	Total Gate Charge	V _{DS} =50V, I _D =40A , V _{GS} =10V	--	56	--	nC
Q _{gs}	Gate-Source Charge		--	10	--	nC
Q _{gd}	Gate-Drain Charge		--	16	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =30V, ID=2A, RL=15Ω, RG=2.5Ω,	--	14.5	--	ns
Tr	Turn-on Rise Time		--	24	--	ns
Td(off)	Turn-Off Delay Time		--	45	--	ns
Tf	Turn-Off Fall Time		--	22	--	ns

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

VSD	Forward on voltage	I _{SD} =40A, V _{GS} =0V	--	0.89	0.99	V
Trr	Reverse Recovery Time (Note1)	I _{sd} =75A , di/dt=100A/μs	--	22	--	ns
Qrr	Reverse Recovery Charge (Note1)		--	27	--	nC

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_{θJA} and the maximum allowed junction temperature of 150°C.

④ Pulse width ≤ 300μs; duty cycles ≤ 2%.

Typical Characteristics

Figure1. Output Characteristics

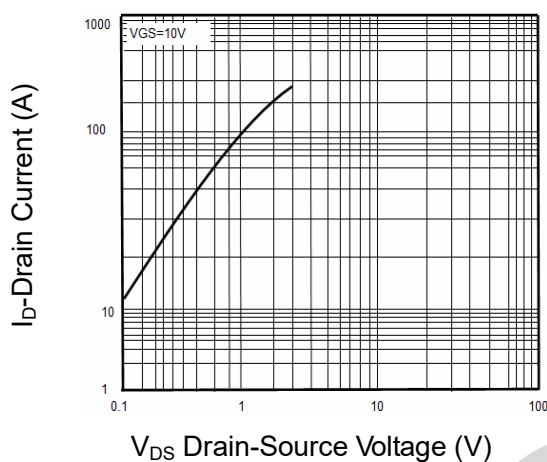


Figure2. Transfer Characteristics

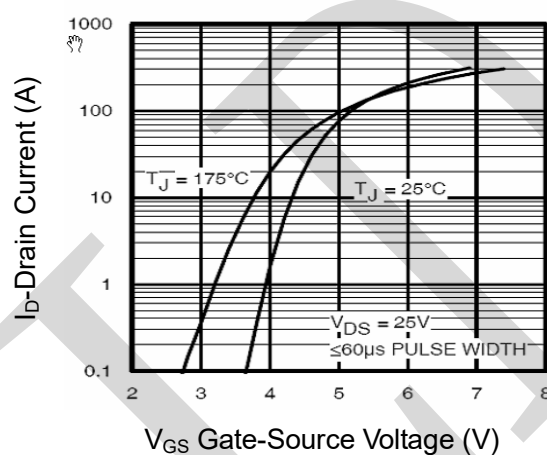


Figure3. BVDSS vs Junction Temperature

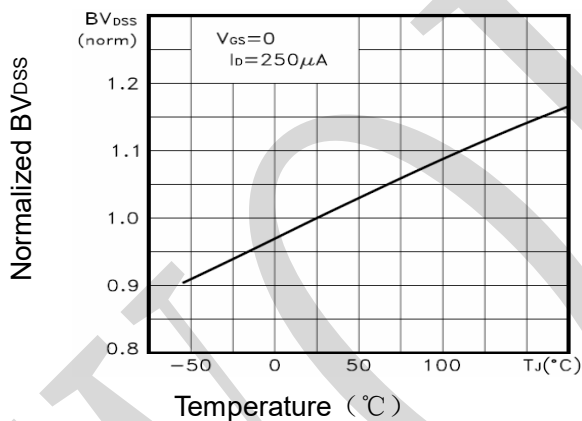


Figure4. ID vs Junction Temperature

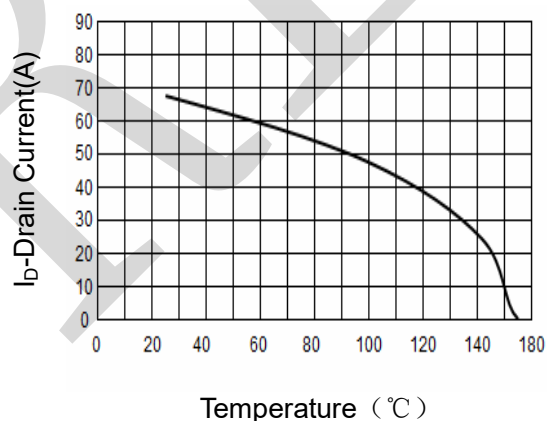


Figure5. VGS(th) vs Junction Temperature

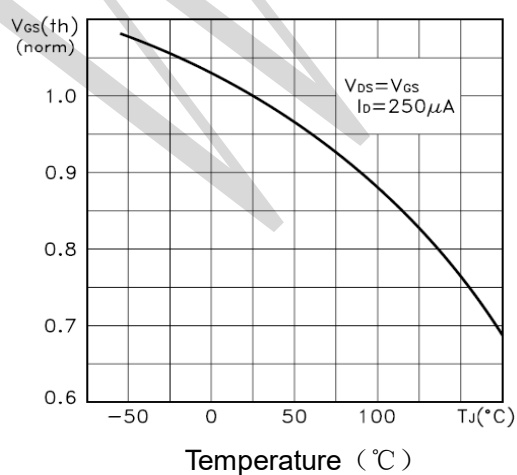


Figure6. Rdson Vs Junction Temperature

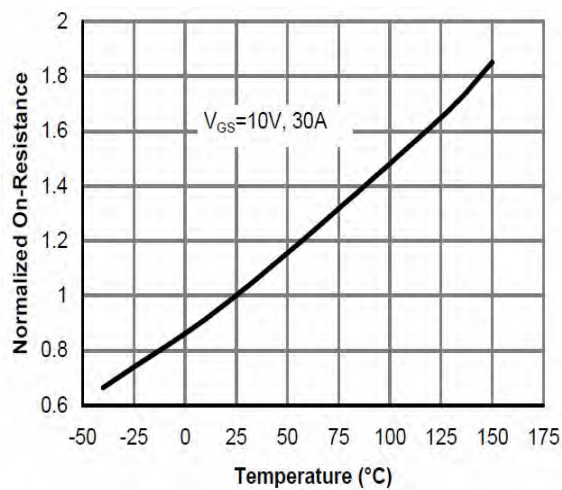


Figure7. Gate Charge

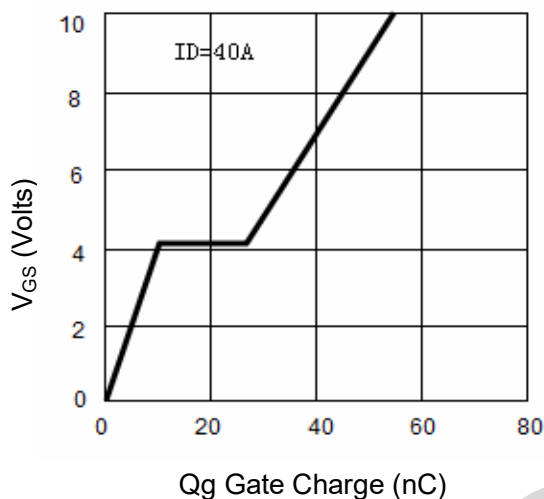


Figure8. Capacitance vs Vds

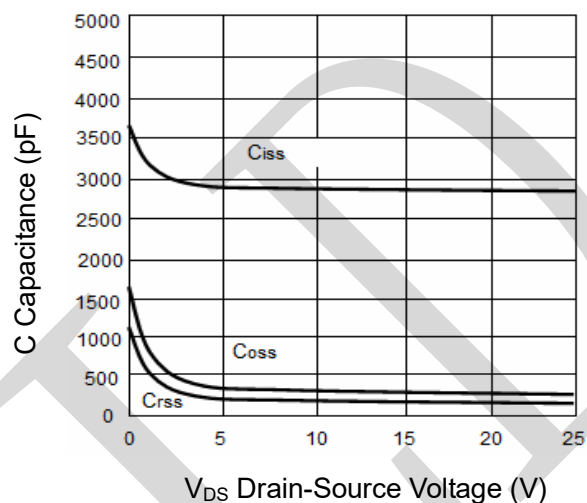


Figure9. Source- Drain Diode Forward

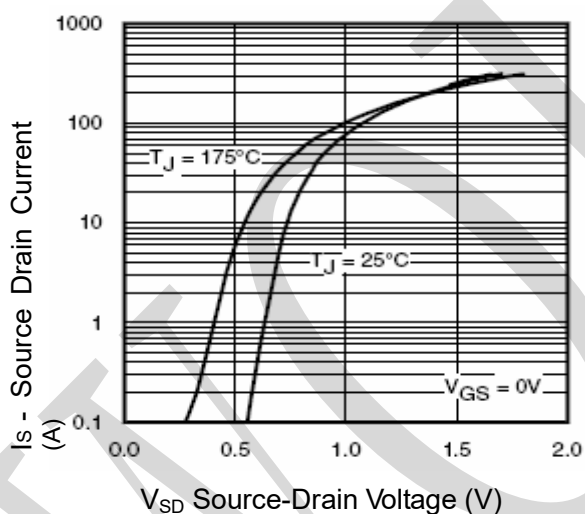


Figure10. Safe Operation Area

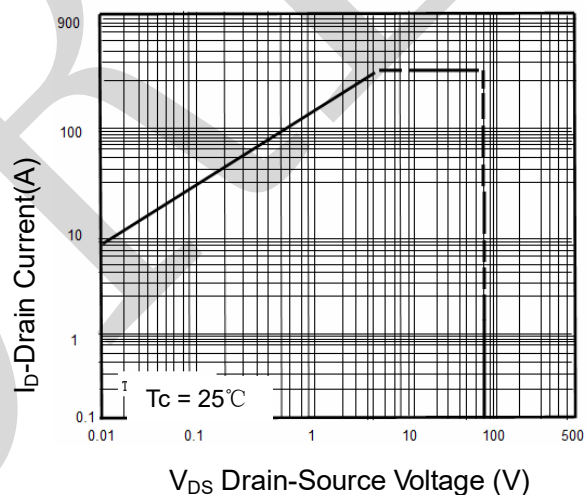
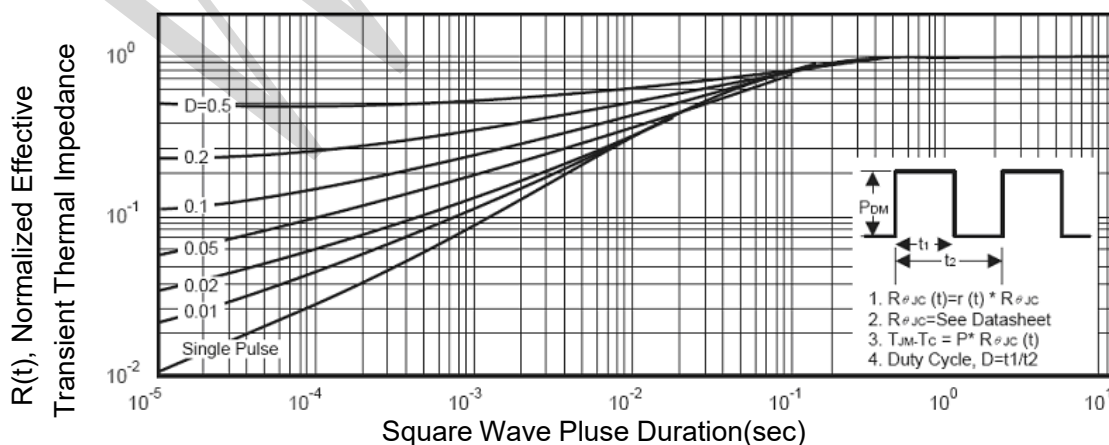


Figure11. Normalized Maximum Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220AB

