MSR007N03D33

10-Jun-2023

N-Channel Advanced Trench MOSFET

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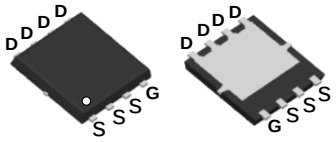
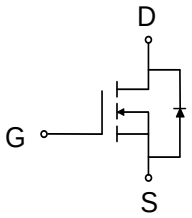
PDFN3.3*3.3





Features

- Advance high cell density Trench technology
- Low RDS(ON) to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Avalanche tested
- 100% DVDS tested

Applications

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

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

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		30	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous d rain c urrent	T_C =25°C	35	A
		T_C =100°C	23	A
I_{DM}	Pulse drain current tested	T_C =25°C	100	A
EAS	Avalanche energy, single pulsed(L=0.1mH)		64	mJ
P_D	Maximum power dissipation	T_C =25°C	25	W
T_{STG},T_J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	5	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @Tj=25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,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	1.0	1.7	2.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=10A	--	5.5	7	mΩ
		V_{GS}=4.5V, I_D=5A	--	8.5	12	mΩ

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

C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0 V , f=1MHz	--	950	--	pF
C_{oss}	Output Capacitance		--	130	--	pF
C_{rss}	Reverse Transfer Capacitance		--	108	--	pF
Q_g	Total Gate Charge	V_{DS}=15V, I_D=10A , V_{GS}=10V	--	22	--	nC
Q_{gs}	Gate-Source Charge		--	2.7	--	nC
Q_{gd}	Gate-Drain Charge		--	5	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DD}=15V V_{GS}=10V I_D=2A R_L=1Ω R_G=3Ω	--	10	--	ns
Tr	Turn-on Rise Time		--	8	--	ns
Td(off)	Turn-Off Delay Time		--	30	--	ns
Tf	Turn-Off Fall Time		--	5	--	ns

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

V_{SD}	Forward on voltage	I_S=1A, V_{GS}=0V	--	--	1.2	V
I_S	Diode Forward Current		--	--	35	A

Typical Characteristics

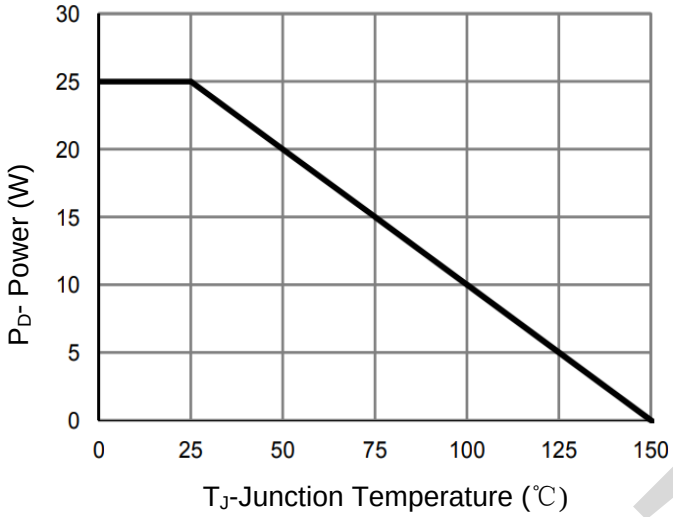


Figure 1 Power De-rating

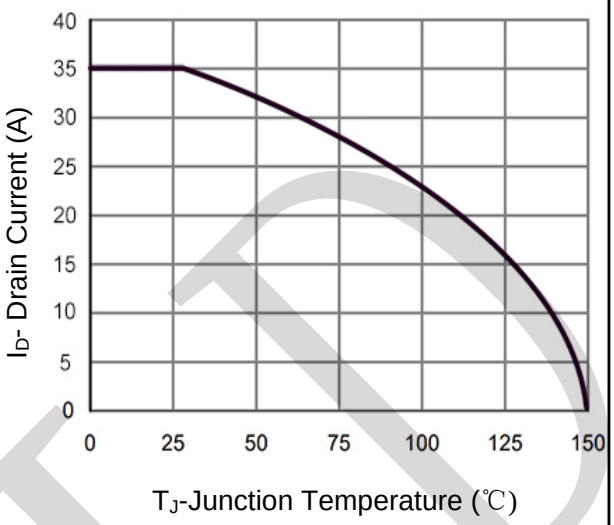


Figure 2 Drain Current

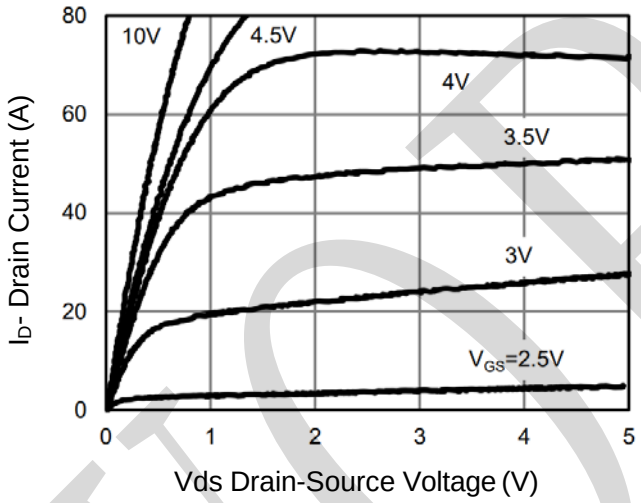


Figure 3 Output Characteristics

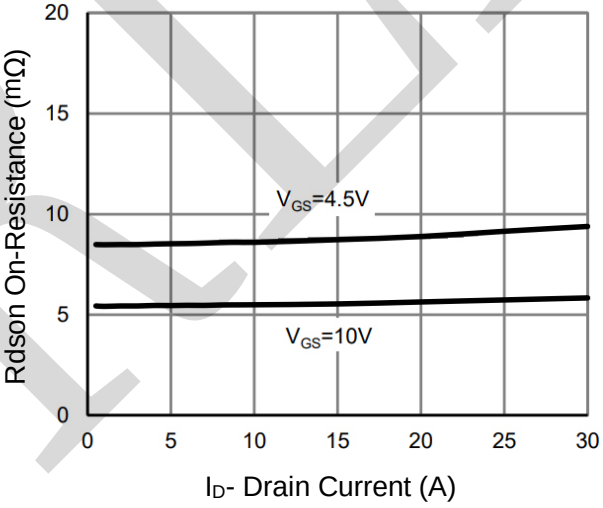


Figure 4 Rdson vs Drain Current

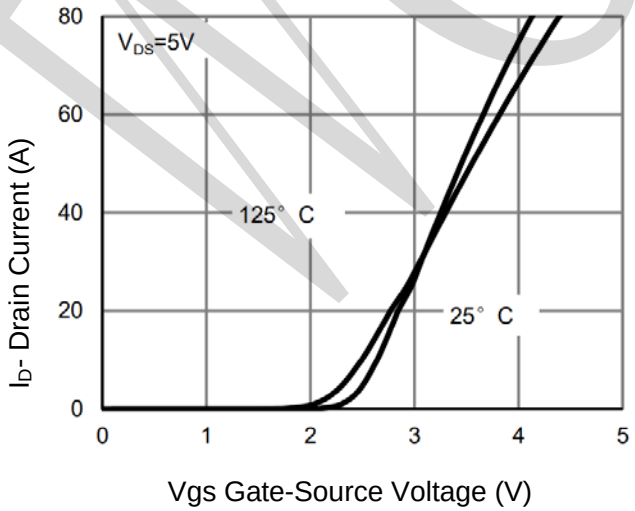


Figure 5 Transfer Characteristics

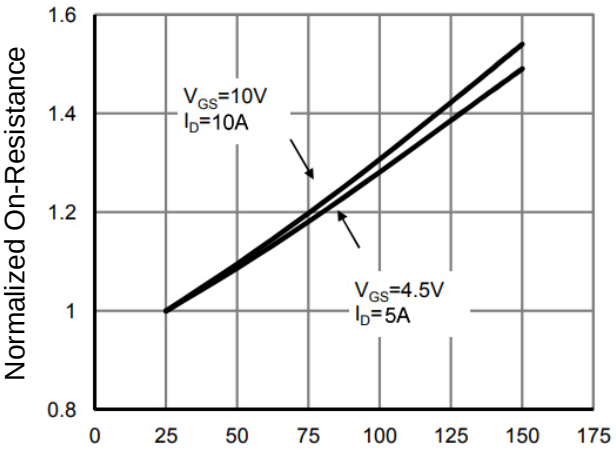


Figure 6 Rdson vs Junction Temperature

Typical Characteristics

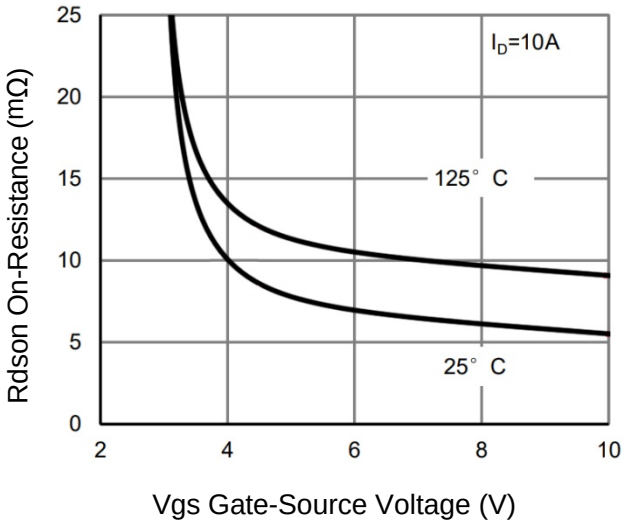


Figure 7 Rdson vs Vgs

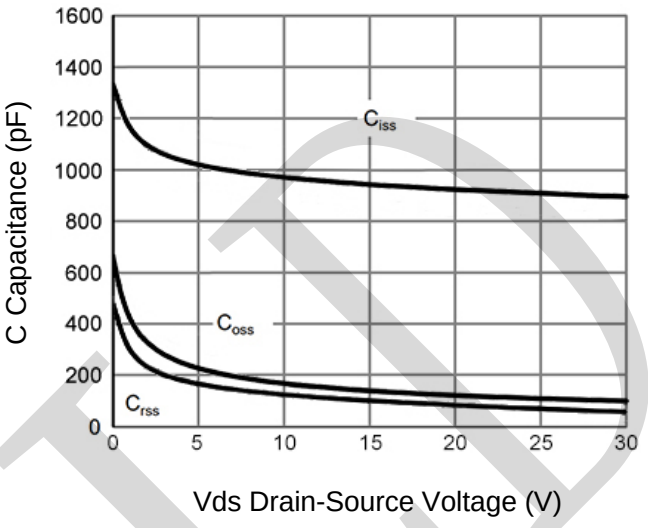


Figure 8 Capacitance vs Vds

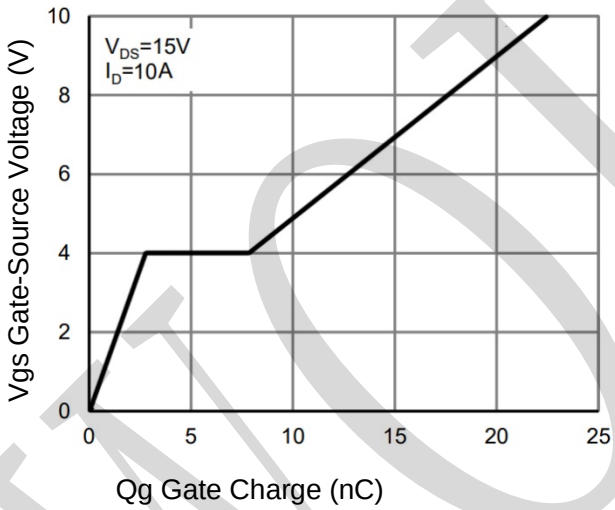


Figure 9 Gate Charge

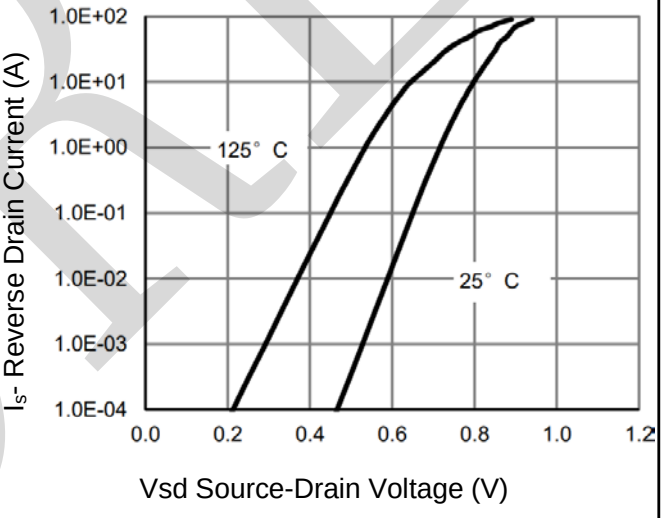


Figure 10 Source- Drain Diode Forward

Typical Characteristics

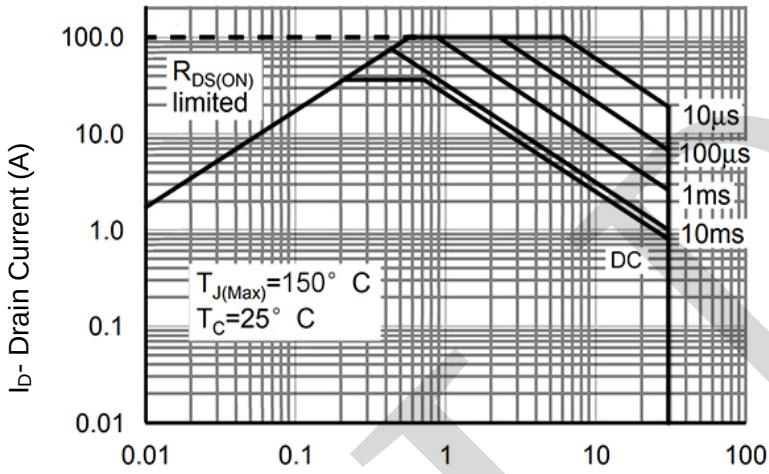


Figure 11 Safe Operation Area

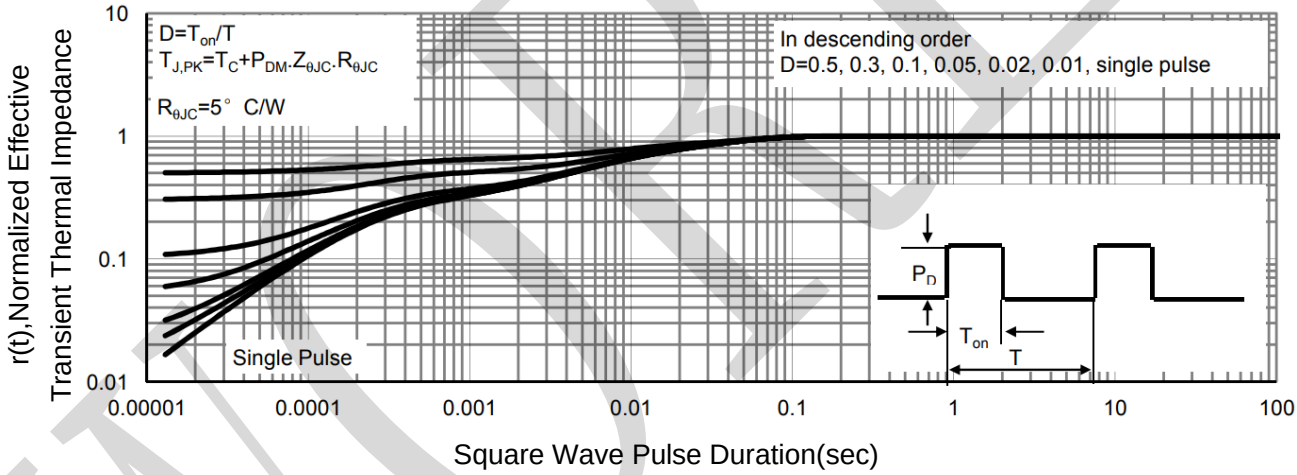
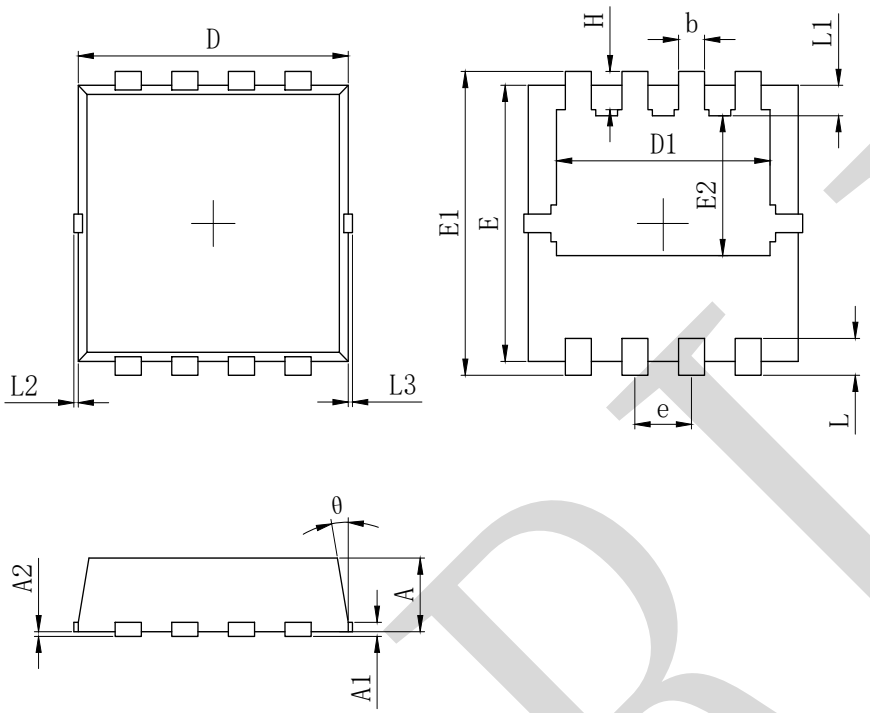


Figure 12 Normalized Maximum Transient Thermal Impedance

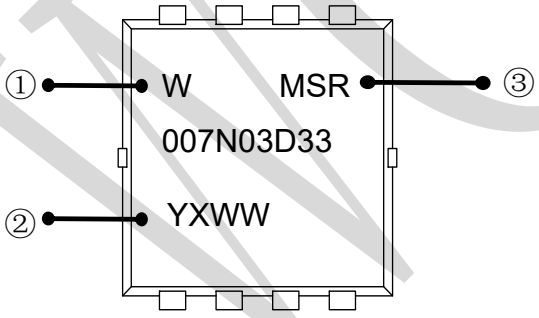
PACKAGE OUTLINE DIMENSIONS

PDFN3.3*3.3



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.320	1.520	1.720
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°

Marking Information



①W : Company's trademark

②Product model : MSR007N03D33

③PDC information：

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)