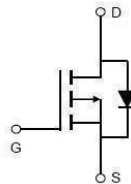
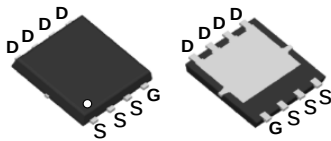


P-Channel Advanced Trench MOSFET

MSR7R8P03D33 PDFN3*3



Features

- Low Gate Charge
- High Power and current handling capability
- Lead free product is acquired

Applications

- Power Management Switches
- PWM Application
- Load Switch

Maximum ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter		Rating	Unit
V(BR)DSS	Drain-Source breakdown voltage		-30	V
VGS	Gate-Source voltage		± 20	V
ID	Continuous drain current @VGS=10V	$T_C = 25^\circ\text{C}$	-44	A
		$T_C = 100^\circ\text{C}$	-28	A
IDM	Pulse drain current tested ①	$T_C = 25^\circ\text{C}$	-176	A
EAS	Avalanche energy, single pulsed ②		289	mJ
PD	Maximum power dissipation	$T_C = 25^\circ\text{C}$	24	W
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to 150	$^\circ\text{C}$

NOTE: ① Repetitive Rating: Pulse width limited by maximum junction temperature.

② EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = -30\text{V}$, $V_G = -10\text{V}$, $R_g = 25\Omega$, $L = 0.5\text{mH}$.

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	5.5	°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	-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	-1.5	-2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-20A	--	6	7.8	mΩ
		V _{GS} =-4.5V, I _D =-15A	--	9.7	13	mΩ
g _{fs}	Forward Transconductance	V _{DS} = -5V, I _D =-20A	--	34	--	S

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

C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V , f=1MHz	--	3240	--	pF
C _{oss}	Output Capacitance		--	380	--	pF
C _{rss}	Reverse Transfer Capacitance		--	231	--	pF
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-20A , V _{GS} =-10V	--	61	--	nC
Q _{gs}	Gate-Source Charge		--	7.5	--	nC
Q _{gd}	Gate-Drain Charge		--	15.5	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =-15V, V _{GS} =-10V R _L =0.75Ω, R _G =3Ω,	--	21	--	ns
Tr	Turn-on Rise Time		--	18	--	ns
Td(off)	Turn-Off Delay Time		--	26	--	ns
Tf	Turn-Off Fall Time		--	8	--	ns

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

I _{SD}	Source-Drain Current (Body Diode)		--	--	-44	V
V _{SD}	Forward on voltage	I _S =-20A, V _{GS} =0V	--	--	-1.2	V
T _{rr}	Reverse Recovery Time	I _F =-10A	--	15	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	--	20	--	nC

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

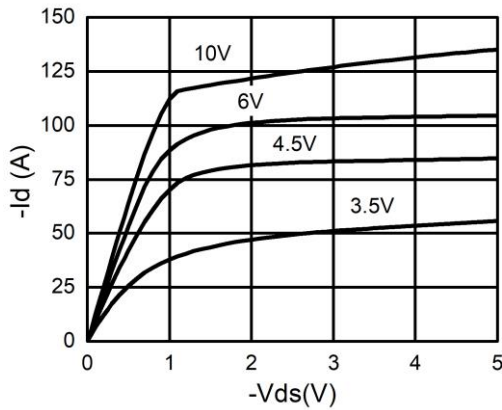


Figure 2. Transfer Characteristics

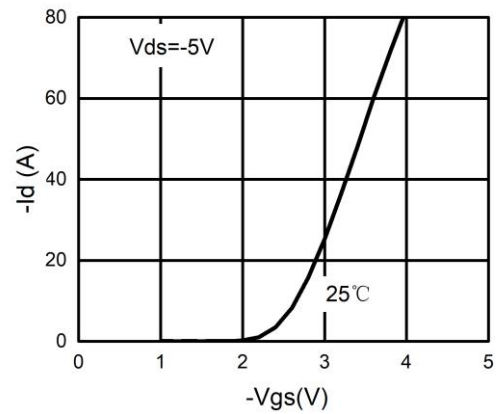


Figure 3. Power Dissipation

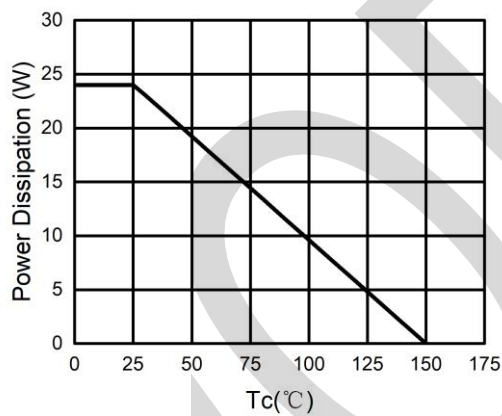


Figure 4. Drain Current

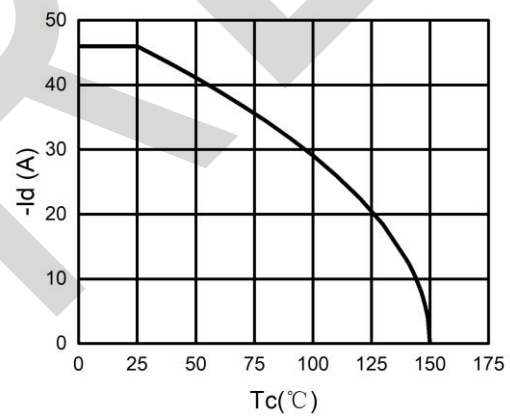


Figure 5. BV_{DSS} vs Junction Temperature

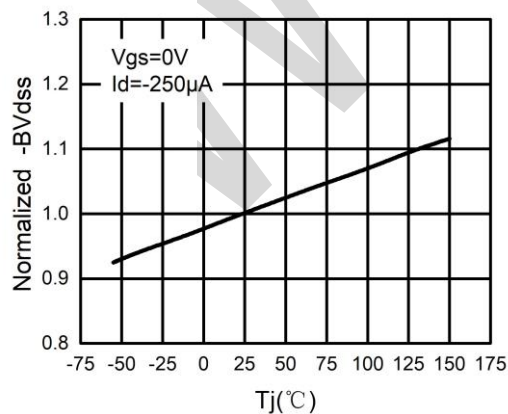
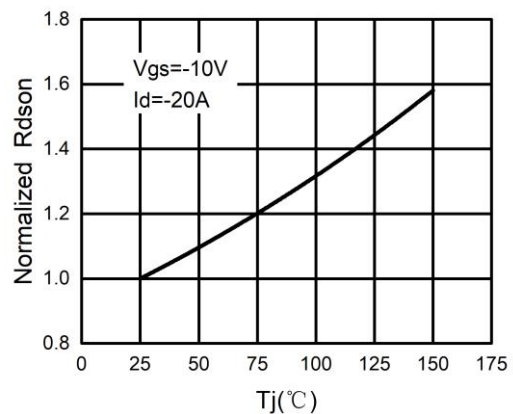


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

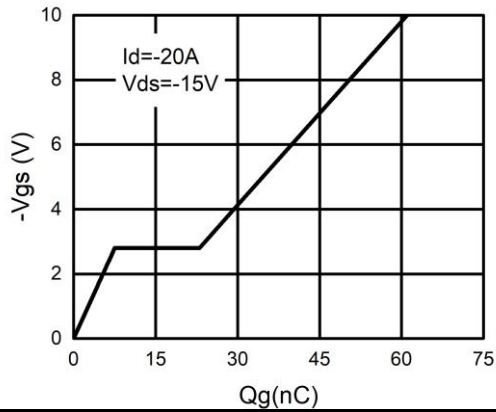


Figure 8. Capacitance

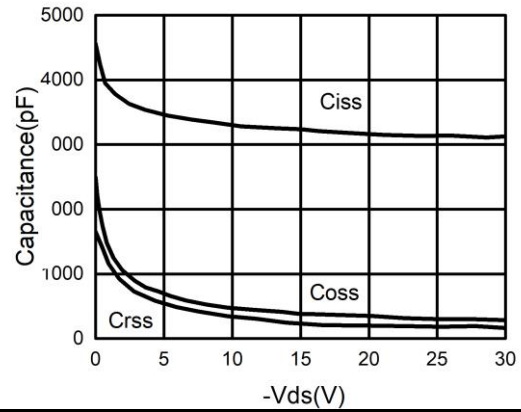


Figure 9. Body-Diode Characteristics

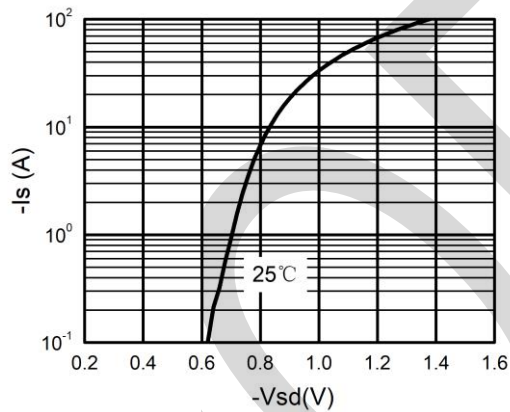
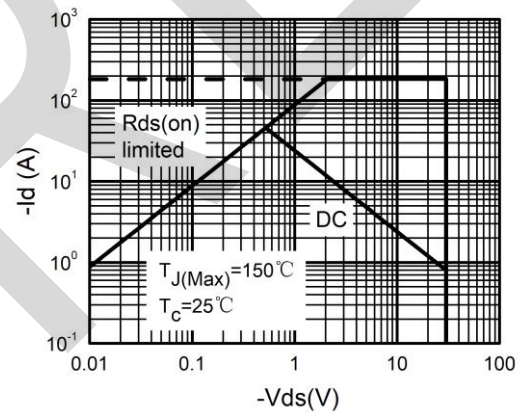
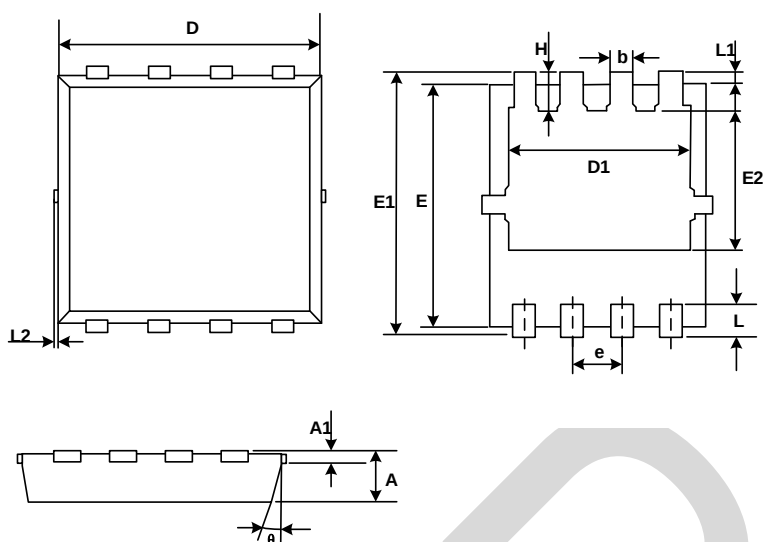


Figure 10. Maximum Safe Operating Area



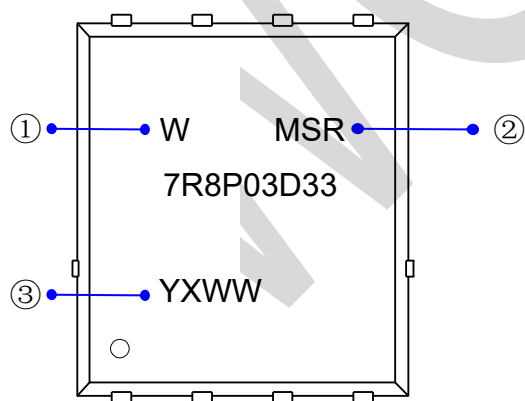
PACKAGE OUTLINE DIMENSIONS



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	0.65	0.90
A1	0.10	0.25
D	2.90	3.25
D1	2.25	2.69
E	2.90	3.20
E1	3.00	3.60
E2	1.35	2.20
b	0.20	0.40
e	0.65BSC	
L	0.15	0.50
L1	0.13BSC	
L2	0.00	0.20
H	0.15	0.65
θ	0°	14°

Marking Information



- ①W : Company's trademark
- ②Product model : MSR7R8P03D33
- ③PDC information :

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)