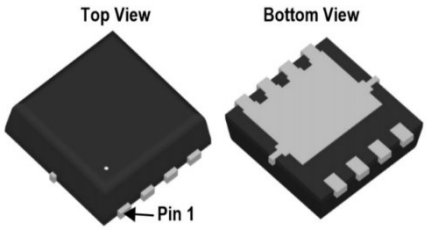
MTR025N10D33

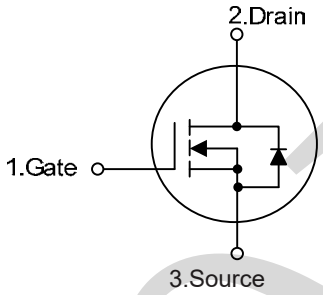
10-JUN-2022

N-Channel Enhancement Mode Power MOSFET

MTR025N10D33

PDFN3*3-8L





V_{DS}	100	V
$R_{DS(on)}$@ V_{GS}=10 V	19	mΩ
I_D	25	A

Features

1、Low on – resistance

2、Package PDFN3*3-8L

3、TRENCH Power MOSFET

Applications

1、Portable Equipment and Battery Powered systems

2、Power Management in Notebook Computer

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

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		100	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous drain current @VGS=10V	T_C=25°C	25	A
		T_C=100°C	18	A
I_{DM}	Pulse drain current tested①	T_C=25°C	100	A
EAS	Avalanche energy, single pulsed		16	mJ
P_D	Maximum power dissipation	T_C=25°C	45	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	2.5	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	36	°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	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V,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	1.2	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=1A	--	19	23	mΩ
		V_{GS}=4.5V, I_D=1A	--	26	33	mΩ
gfs	Forward Transconductance	V_{DS} =10V,I_D = 20A	--	22	--	S

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

C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V , f=1MHz	--	822	--	pF
C_{oss}	Output Capacitance		--	310	--	pF
C_{rss}	Reverse Transfer Capacitance		--	23,5	--	pF
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V , f=1MHz	--	1.62	--	Ω
Q_g	Total Gate Charge	V_{DS}=50V,I_D=20A , V_{GS}=10V	--	22.7	--	nC
Q_{gs}	Gate-Source Charge		--	6.2	--	nC
Q_{gd}	Gate-Drain Charge		--	5.7	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DS}=50V, VGS=10V, I_D=20A RG=3.0Ω,	--	15	--	ns
Tr	Turn-on Rise Time		--	3.2	--	ns
Td(off)	Turn-Off Delay Time		--	30	--	ns
Tf	Turn-Off Fall Time		--	7.6	--	ns

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

V_{SD}	Forward on voltage	I_S=10A,V_{GS}=10V	--	--	1.2	V
Is	Diode Forward Current	T_C = 25°C	--	--	25	A
Trr	Reverse Recovery Time ②	I_F=20A , VGS=0V di/dt=100A/μs	--	45	--	ns
Qrr	Reverse Recovery Charge ②		--	59	--	nC

NOTE:

①Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

②Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

Typical Performance Characteristics

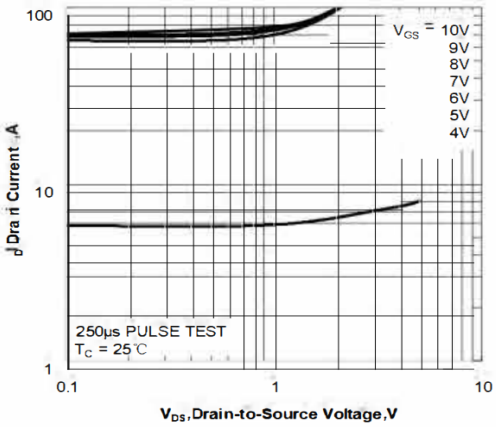


Figure 1. Output Characteristics

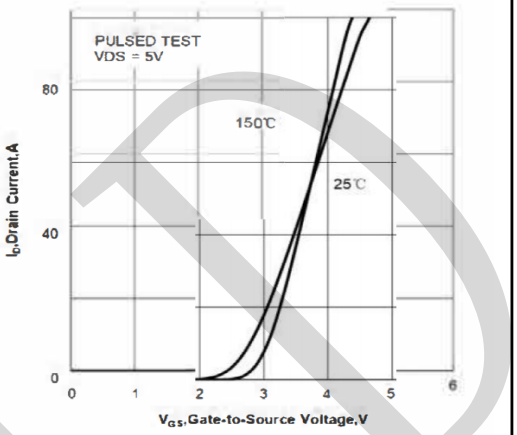


Figure 2. Transfer Characteristics

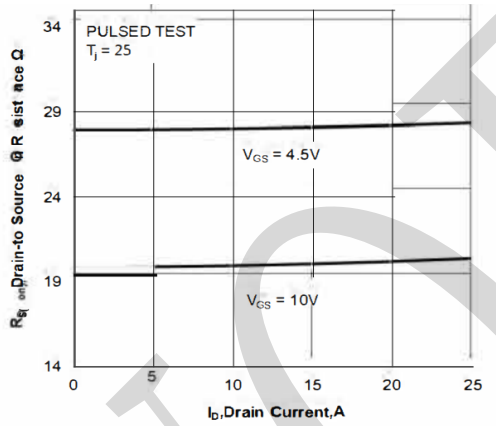


Figure 3. Drain-to-Source On Resistance vs Drain Current

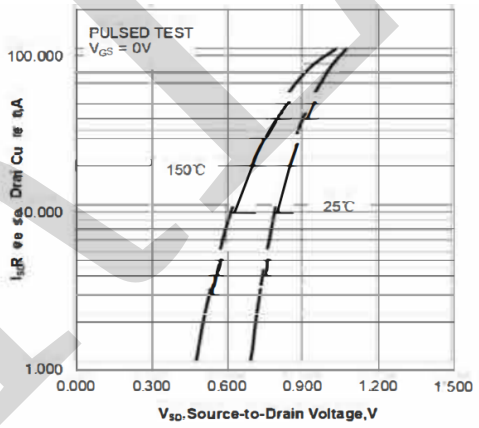


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

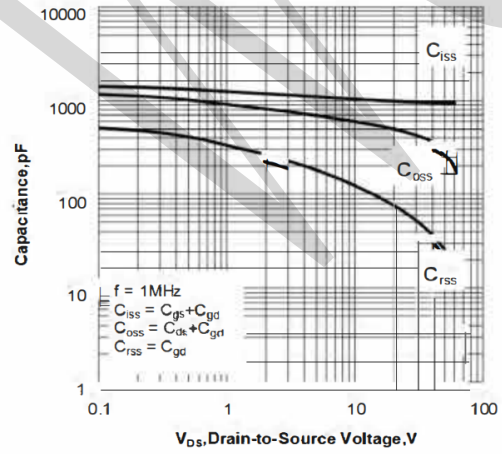


Figure 5. Capacitance Characteristics

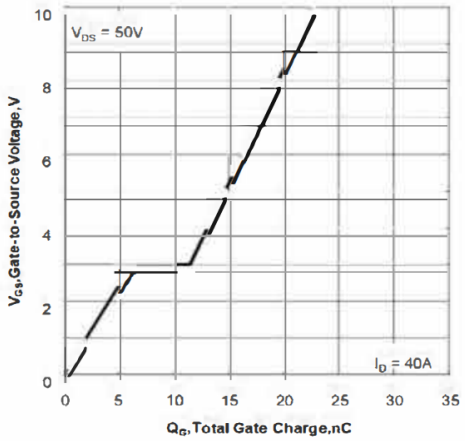


Figure 6. Gate Charge Characteristics

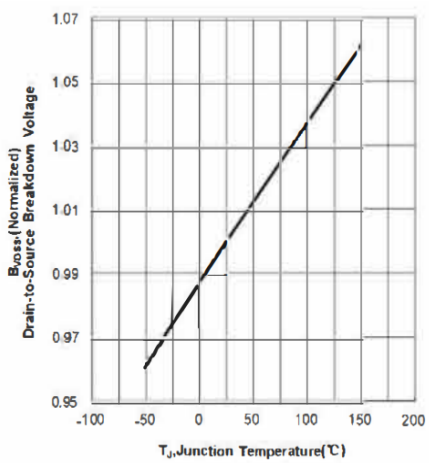


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

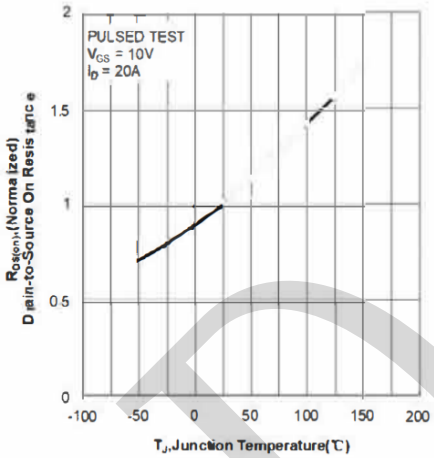


Figure 8. Normalized On Resistance vs Junction Temperature

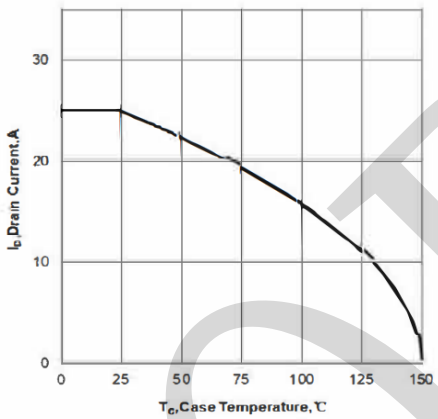


Figure 9. Maximum Continuous Drain Current vs Case Temperature

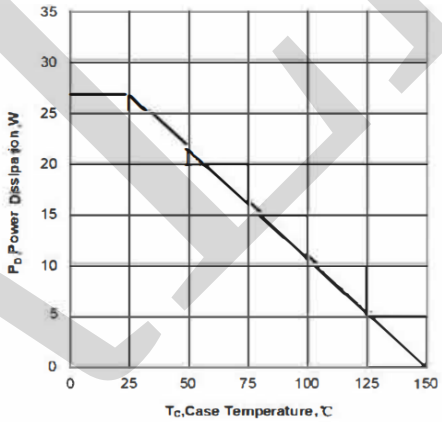


Figure 10. Maximum Power Dissipation vs Case Temperature

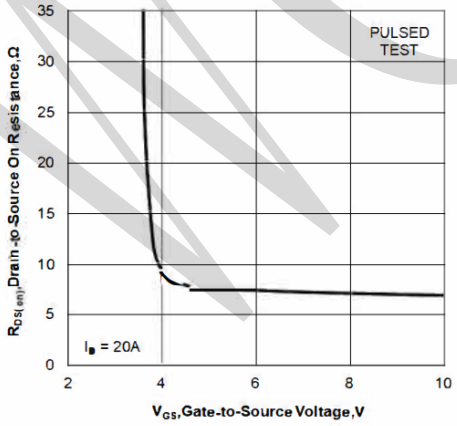


Figure11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

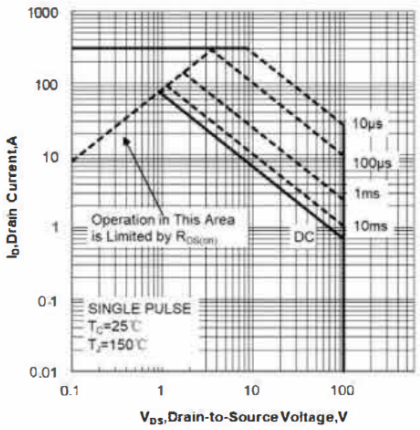


Figure 12. Maximum Safe Operating Area

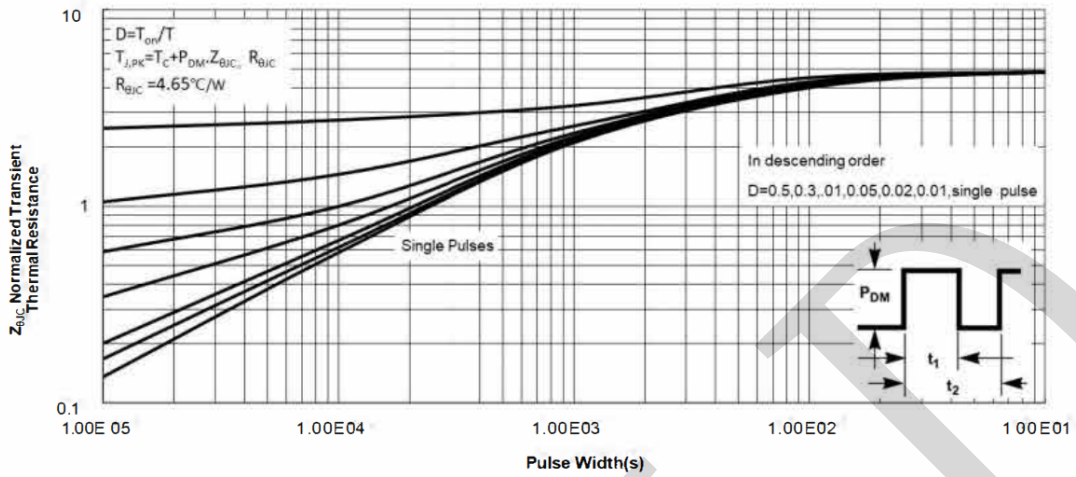
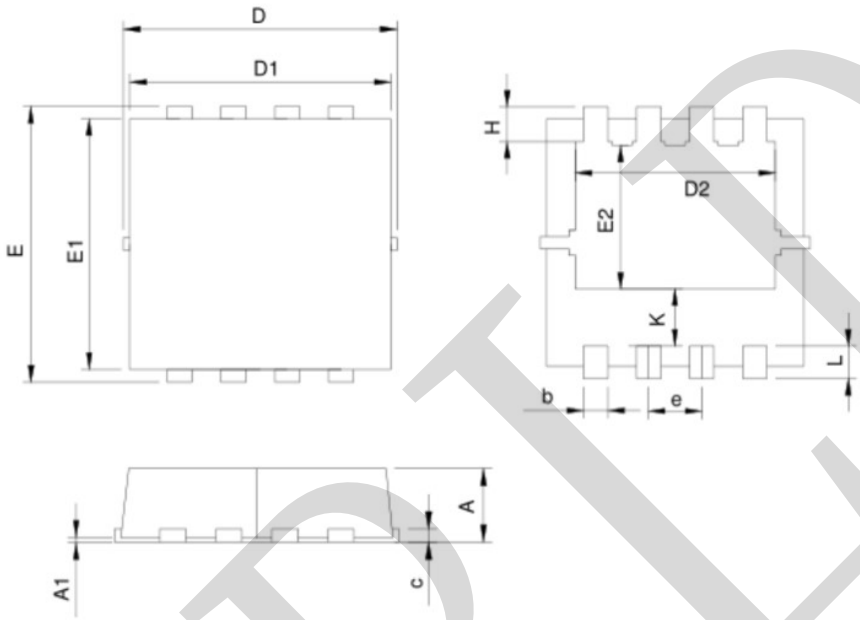


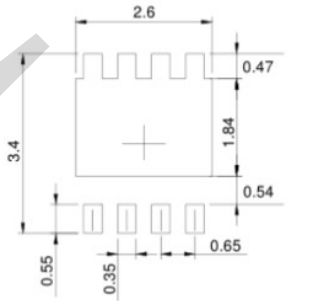
Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case

PACKAGE OUTLINE DIMENSIONS



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm