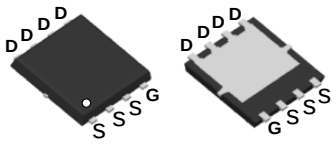
MTR4R4N03D33

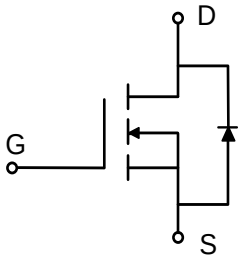
10-JUN-2023

SGT N-Channel Power MOSFET

MTR4R4N03D33

PDFN3*3





V_{DS}	30	V
$R_{DS(on),max}$@ V_{GS}=10 V	4.4	mΩ
I_D	70	A

Features

1、Low on – resistance
2、High power package (PDFN3*3)
3、SGT N-channel Power MOSFET
4、Halogen free

Applications

1、Power Management Switches
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		30	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous drain current @VGS=10V	T_C =25°C	70	A
		T_C =100°C	44	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	280	A
EAS	Avalanche energy, single pulsed ②		45	mJ
P_D	Maximum power dissipation	T_C =25°C	33.8	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	3.7	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	60	°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	1.6	2.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	--	3.4	4.4	mΩ
		V_{GS}=4.5V, I_D=10A	--	4.6	6.5	mΩ
gfs	Forward Transconductance	V_{DS} = 10V, I_D =20A	--	90	--	S

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

C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V , f=1MHz	--	1110	--	pF
C_{oss}	Output Capacitance		--	428	--	pF
C_{rss}	Reverse Transfer Capacitance		--	33	--	pF
R_g	Gate Resistance	V_{GS} = 0V, V_{DS}= 0V, f = 1MHz	--	1.1	--	Ω
Q_g	Total Gate Charge	V_{DS}=15V, I_D=20A , V_{GS}=10V	--	18	--	nC
Q_{gs}	Gate-Source Charge		--	3.2	--	nC
Q_{gd}	Gate-Drain Charge		--	2.5	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DD}=15V, V_{GS}=10V I_D=20A, R_G=3Ω,	--	6.1	--	ns
Tr	Turn-on Rise Time		--	4	--	ns
Td(off)	Turn-Off Delay Time		--	16.9	--	ns
Tf	Turn-Off Fall Time		--	4.4	--	ns

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

V_{SD}	Forward on voltage	I_S=20A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time	I_F=20A di/dt=100A/μs	--	35.6	--	ns
Qrr	Reverse Recovery Charge		--	10.8	--	nC

NOTE: ① Repetitive rating; pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

② The test condition is V_{DD}=25V,V_{GS}=10V,L=0.4mH, I_{AS}=15A.

Typical Characteristics

Figure 1. Output Characteristics

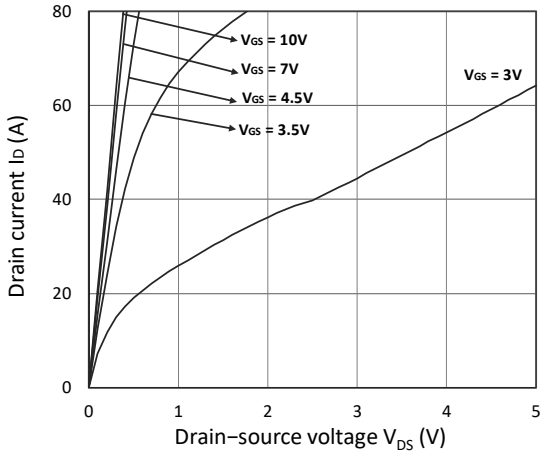


Figure 2. Transfer Characteristics

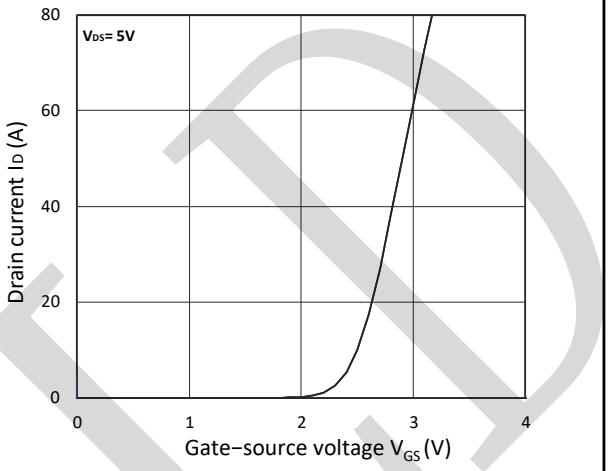


Figure 3. Forward Characteristics of Reverse

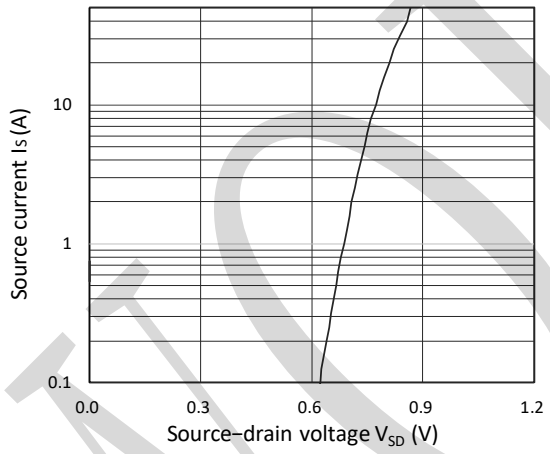


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

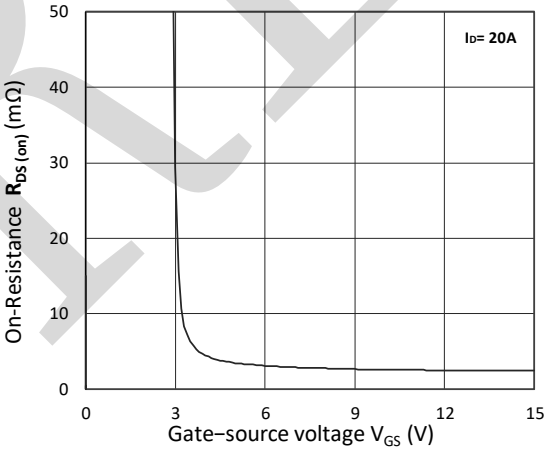


Figure 5. $R_{DS(ON)}$ vs. I_D

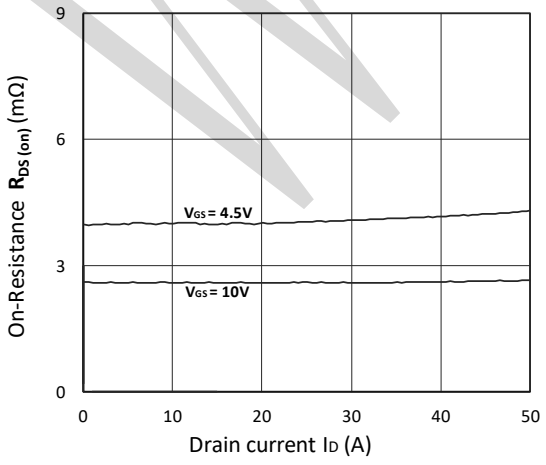
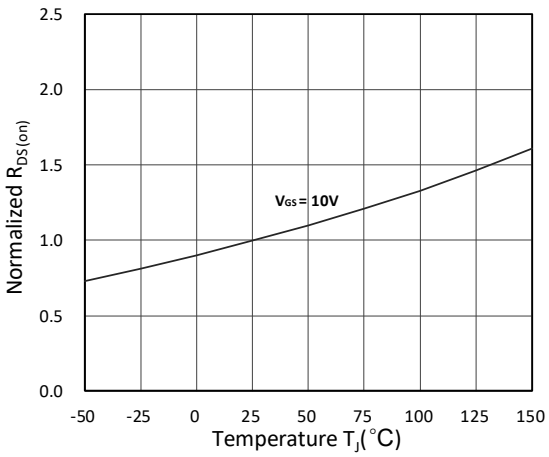


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature



Typical Characteristics

Figure 7. Capacitance Characteristics

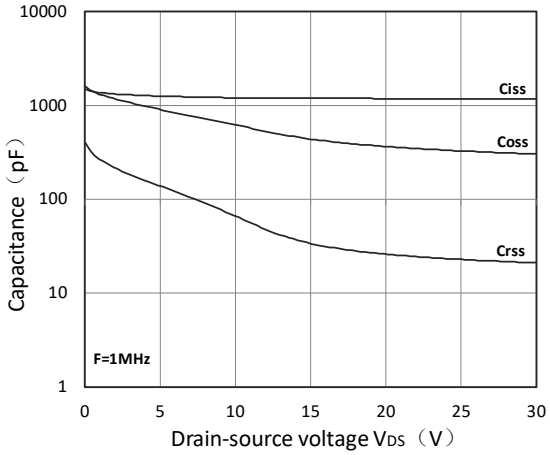


Figure 8. Gate Charge Characteristics

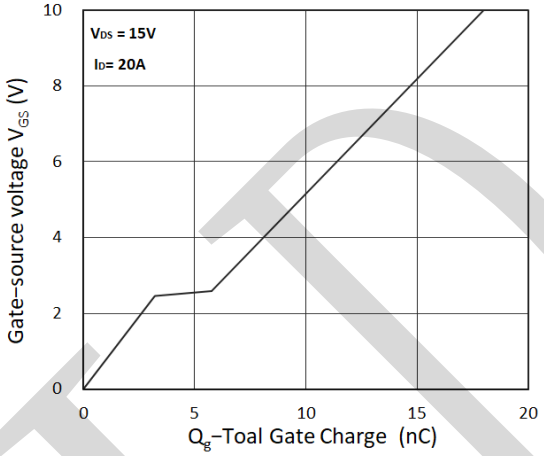


Figure 9. Power Dissipation

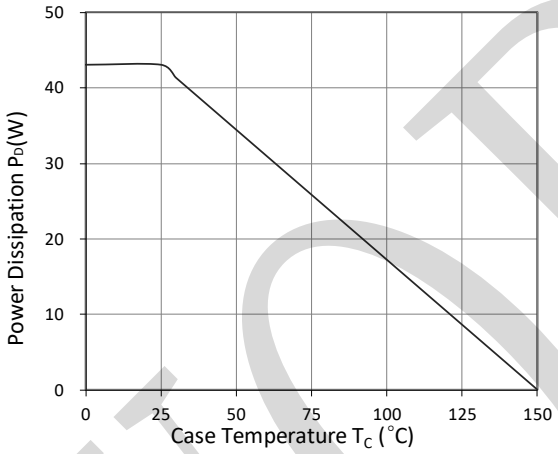


Figure10. Safe Operating Area

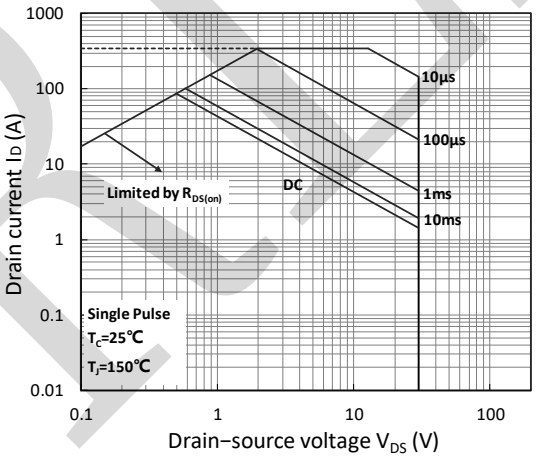
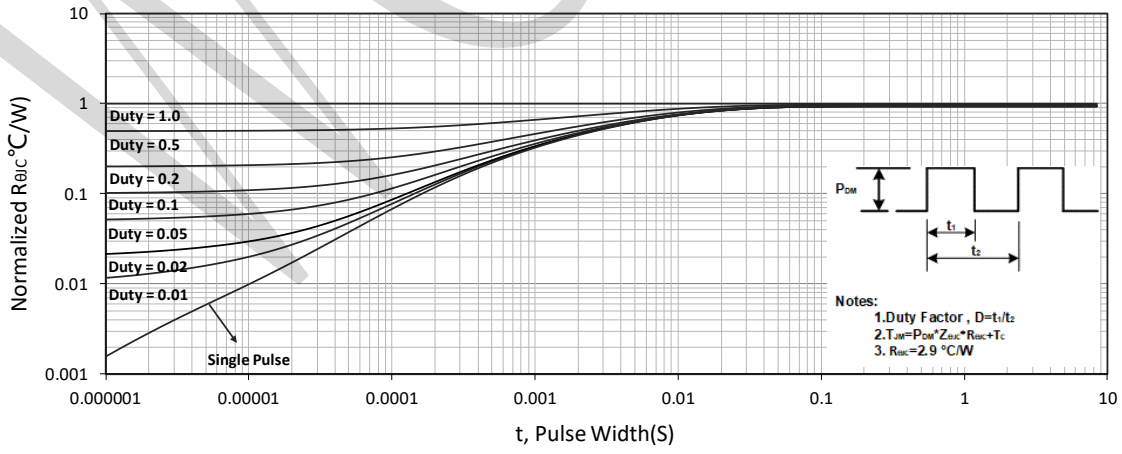
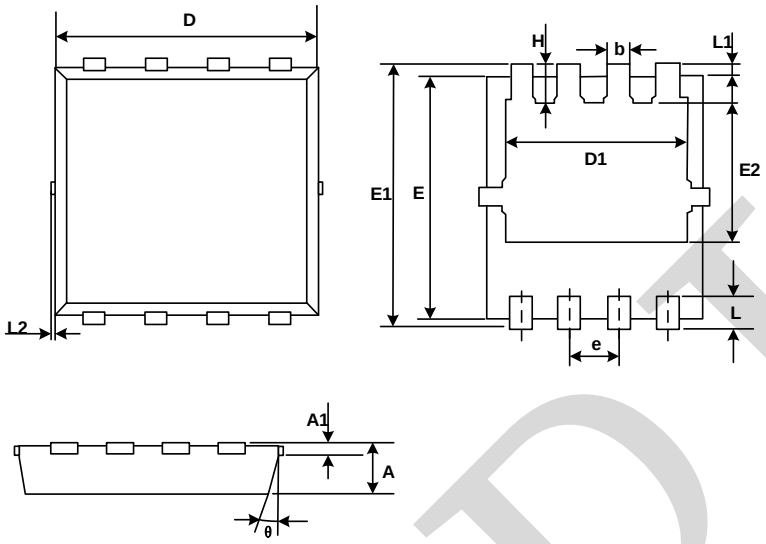


Figure 11. Normalized Maximum Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

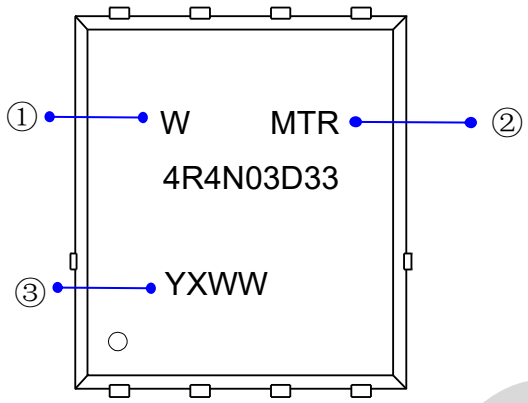


COMMON DIMENSIONS

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°

PACKAGE OUTLINE DIMENSIONS

Marking Information



①W : Company's trademark
②Product model : MTR4R4N03D33
③PDC information：

Y X WW

WW:Week code(01 to 53)
X:Internal identification code
Y:Year code(ex:0=2020)