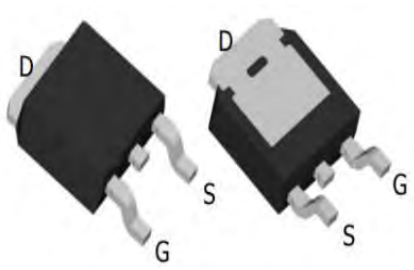
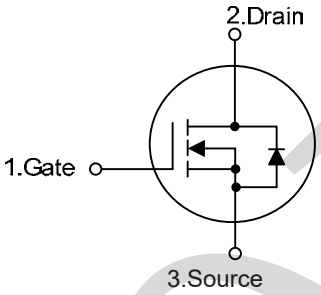
SGT N-channel Power MOSFET

MTR7R2N10D

TO-252





V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	6.1	mΩ
I_D	100	A

Features

1、Low on – resistance

2、Package TO-252

3、SGT Power MOSFET

Applications

1、Load Switch for Portable Devices

2、DC/DC Converter

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_S	Diode continuous forward current		100	A
I_D	Continuous drain current @VGS=10V	T_C =25°C	100	A
		T_C =100°C	52	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	400	A
EAS	Avalanche energy, single pulsed ②		473	mJ
P_D	Maximum power dissipation	T_C =25°C	94	W
T_{STG},T_J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	64	°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}=100V,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	1.7	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance ③	V_{GS}=10V, I_D=40A	--	6.1	7.2	mΩ

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

C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V , f=1MHz	--	4238	--	pF
C_{oss}	Output Capacitance		--	389	--	pF
C_{rss}	Reverse Transfer Capacitance		--	16.8	--	pF
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V , f=1MHz	--	2.5	--	Ω
Q_g (10V)	Total Gate Charge	V_{DS}=50V,I_D=50A , V_{GS}=10V	--	33.1	--	nC
Q_{gs}	Gate-Source Charge		--	5.6	--	nC
Q_{gd}	Gate-Drain Charge		--	7.2	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DS}=50V, V_{GS}=10V, R_G=2.7Ω	--	15.3	--	ns
Tr	Turn-on Rise Time		--	90.1	--	ns
Td(off)	Turn-Off Delay Time		--	23.6	--	ns
Tf	Turn-Off Fall Time		--	52.4	--	ns

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

V_{SD}	Forward on voltage ③	I_{SD}=20A,V_{GS}=0V	--	0.87	1.4	V
Trr	Reverse Recovery Time	I_{SD}=20A , di/dt=100A/μs	--	60.2	--	ns
Qrr	Reverse Recovery Charge		--	135	--	nC

Notes: ① Pulse width limited by maximum allowable junction temperature

② Limited by TJmax, starting TJ = 25°C, L = 0.5mH,Rg = 25Ω. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

Fig 1: Output Characteristics

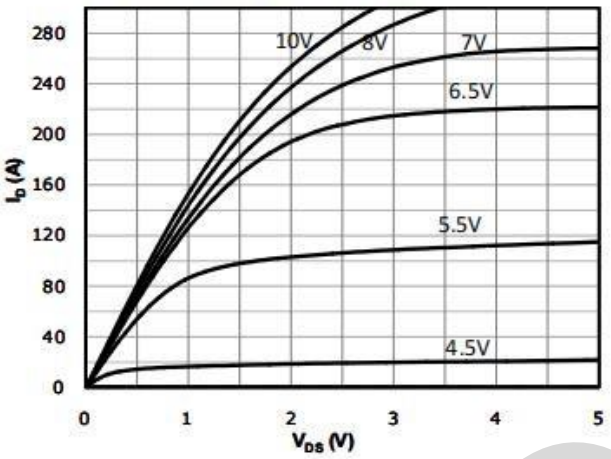
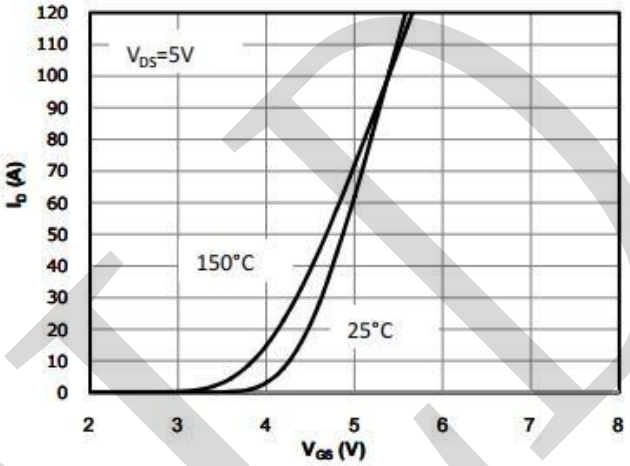


Fig 2: Transfer Characteristics



3: Rds(on) vs Drain Current and Gate Voltage

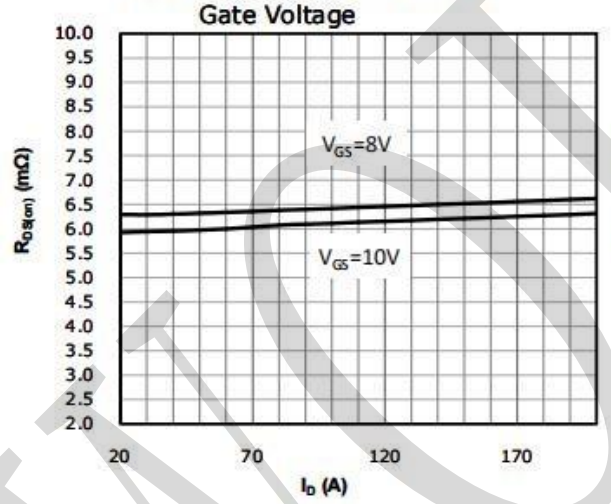


Fig 4: Rds(on) vs Gate Voltage

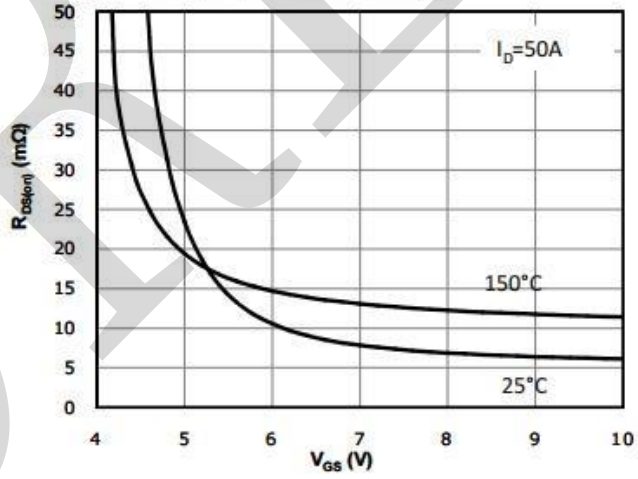


Fig 5: Rds(on) vs. Temperature

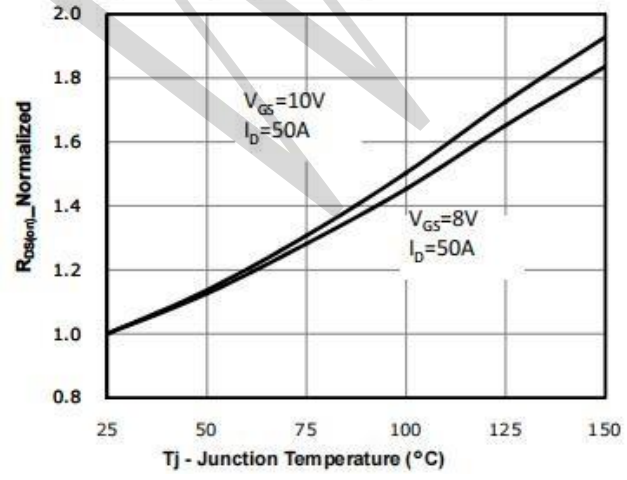
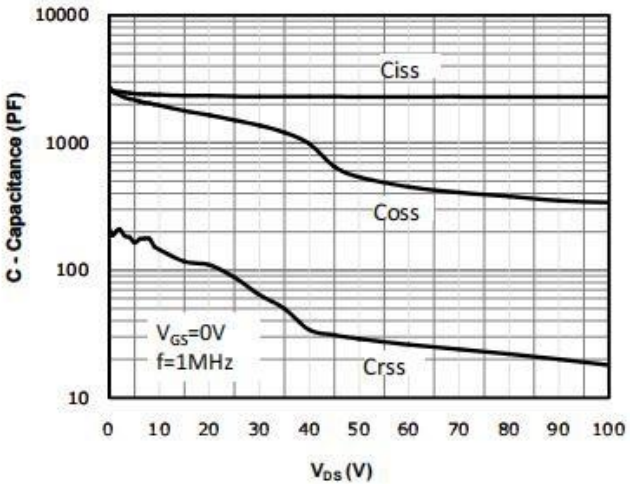


Fig 6: Capacitance Characteristics



Typical Characteristics

Fig 7: Gate Charge Characteristics

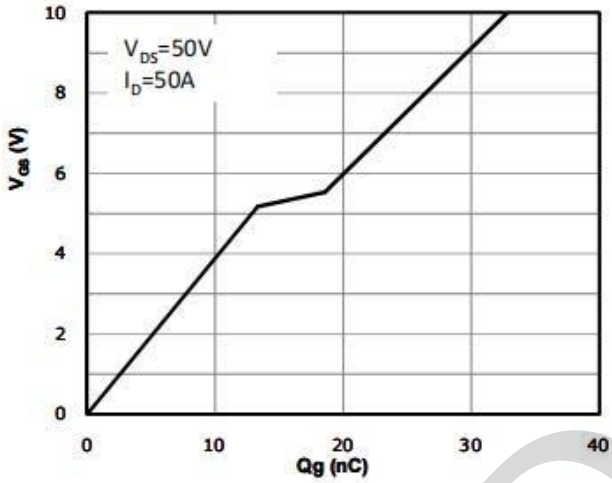


Fig 8: Body-diode Forward Characteristics

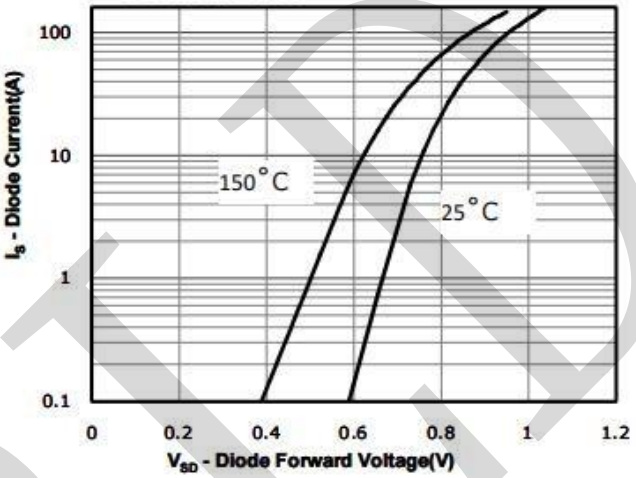


Fig 9: Power Dissipation

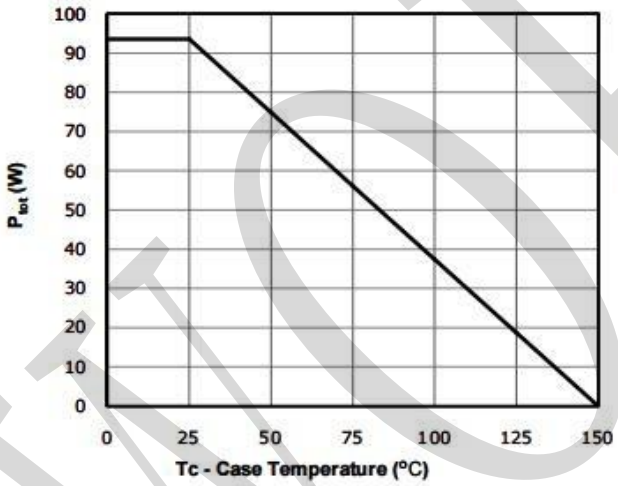


Fig 10: Drain Current Derating

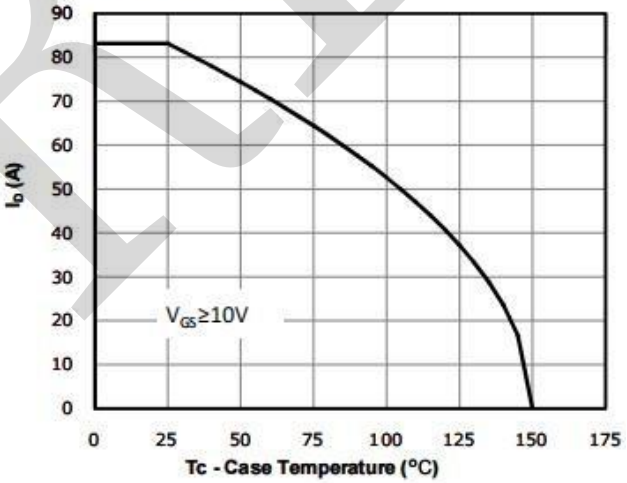


Fig 11: Safe Operating Area

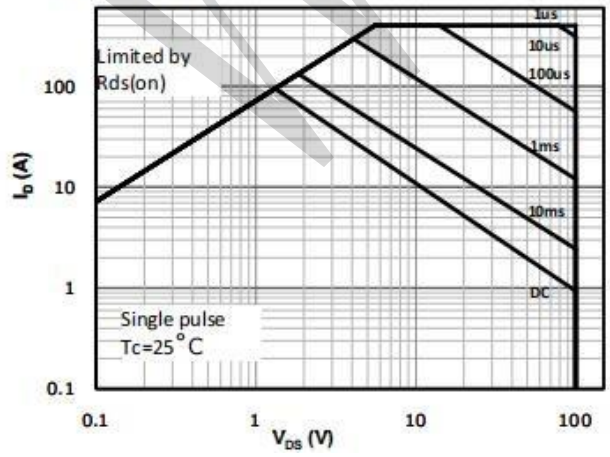
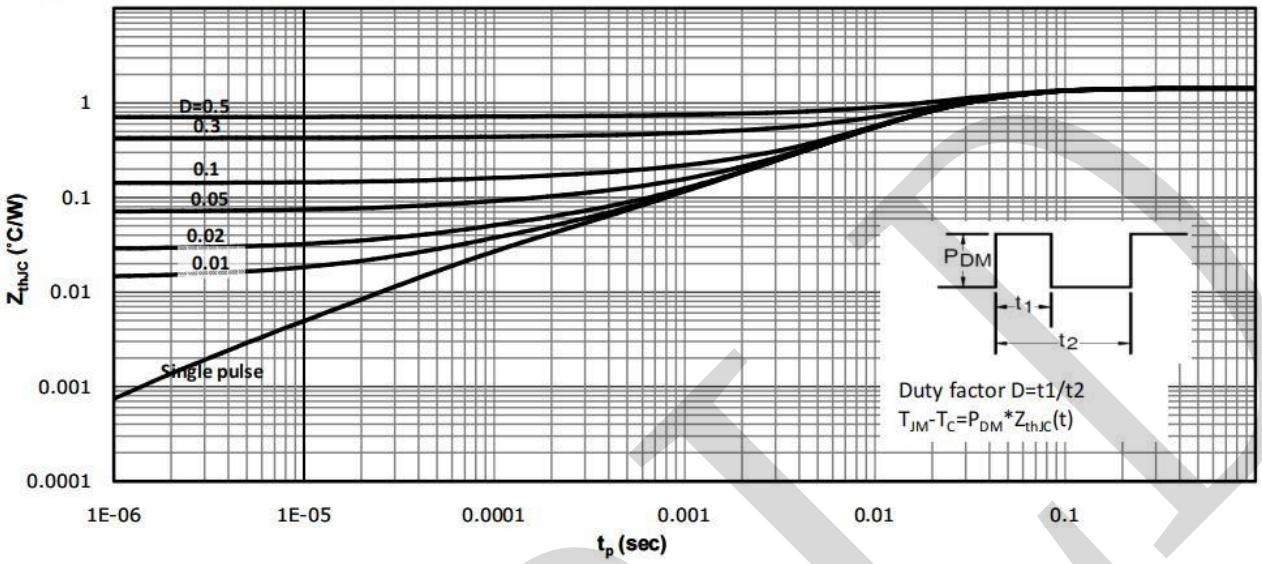
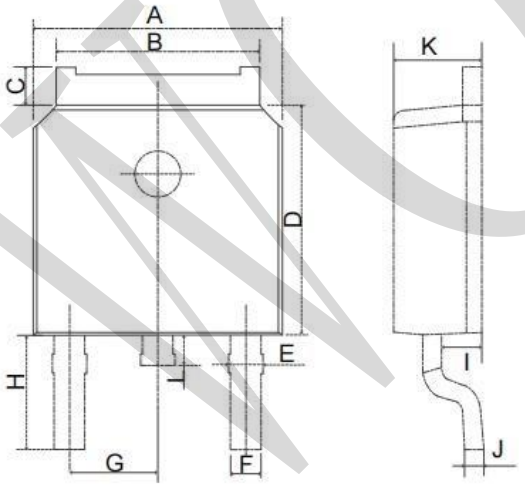


Fig 12: Max. Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

TO-252



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	6.40	6.80
B	5.13	5.50
C	0.88	1.28
D	5.90	6.22
E	0.68	1.10
F	0.68	0.91
G	2.29REF	
H	2.90REF	
I	0.85	1.17
J	0.51REF	
K	2.10	2.50
L	0.40	1.00