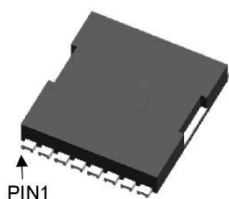


SGT N-channel Power MOSFET

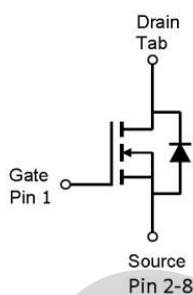
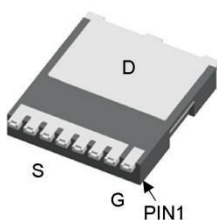
MTR002N08TL

TOLL

TOLL Top View



TOLL Bottom View



V_{DS}	80	V
$R_{DS(on),TYP@ V_{GS}=10V}$	1.4	m Ω
I_D	240	A

Features

- 1、Low on – resistance
- 2、Package TOLL
- 3、SGT N-channel Power MOSFET

Applications

- 1、Load Switch for Portable Devices
- 2、DC/DC Converter

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

Symbol	Parameter		Rating	Unit
V(BR)DSS	Drain-Source breakdown voltage		80	V
VGS	Gate-Source voltage		±20	V
ID	Continuous drain current @VGS=10V	T _C =25°C (Siliconlimit)	260	A
		T _C =25°C (Package limit)	240	A
		T _C =100°C (Siliconlimit)	170	A
IDM	Pulse drain current tested ①	T _C =25°C	750	A
EAS	Avalanche energy, single pulsed ②		2500	mJ
PD	Maximum power dissipation	T _C =25°C	250	W
TSTG,TJ	Storage and Junction Temperature Range		-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	0.5	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	52	°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	80	--	--	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	2.0	3.0	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance ④	V _{GS} =10V, I _D =50A	--	1.4	2.0	mΩ
g _{fs}	Transconductance	V _{DS} =5V, I _D =50A	--	227	--	S

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

C _{iss}	Input Capacitance	V _{DS} =40V, V _{GS} =0V , f=1MHz	--	14667	--	pF
C _{oss}	Output Capacitance		--	2300	--	pF
C _{rss}	Reverse Transfer Capacitance		--	843	--	pF
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	--	2	--	Ω
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =40V, I _D =50A	--	205	--	nC
Q _{gs}	Gate-Source Charge		--	54	--	nC
Q _{gd}	Gate-Drain Charge		--	46	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	VGS=10V, VDS=40V, RL=3.0Ω, Tj=25°C	--	38	--	ns
Tr	Turn-on Rise Time		--	132	--	ns
Td(off)	Turn-Off Delay Time		--	126	--	ns
Tf	Turn-Off Fall Time		--	153	--	ns

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

VSD	Forward on voltage	ISD=50A, VGS=0V	--	0.8	1.2	V
Trr	Reverse Recovery Time	IF=30A, di/dt=500A/μs	--	112	--	ns
Qrr	Reverse Recovery Charge	IF=30A, di/dt=500A/μs	--	220	--	nC

NOTE: ① Repetitive rating; pulse width limited by max junction temperature.

② Limited by Tjmax, starting Tj = 25°C, L = 0.5mH, RG = 25Ω. Part not recommended for use above this value

③ The power dissipation PDSM is based on RθJA and the maximum allowed junction temperature of 150°C.

④ Pulse width ≤ 380μs; duty cycle ≤ 2%.

Typical Performance Characteristics

Fig 1: Output Characteristics

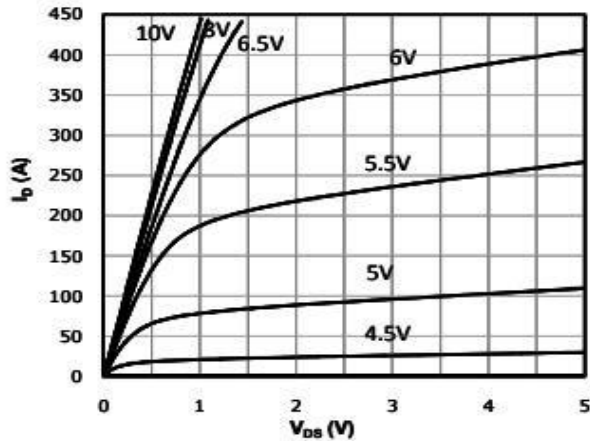


Fig 2: Transfer Characteristics

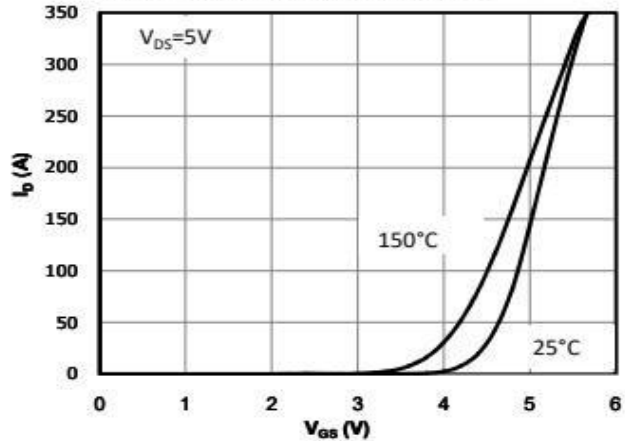


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

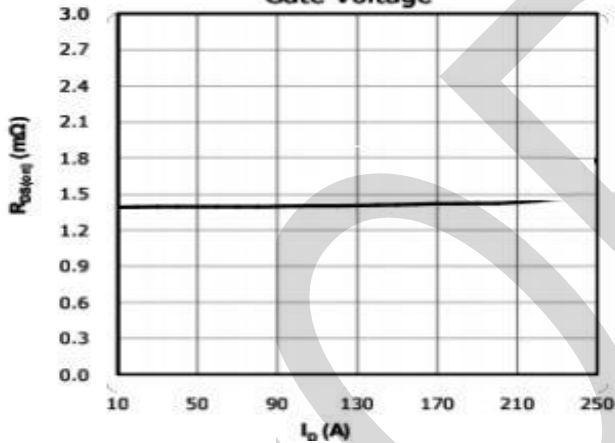


Fig 4: $R_{DS(on)}$ vs Gate Voltage

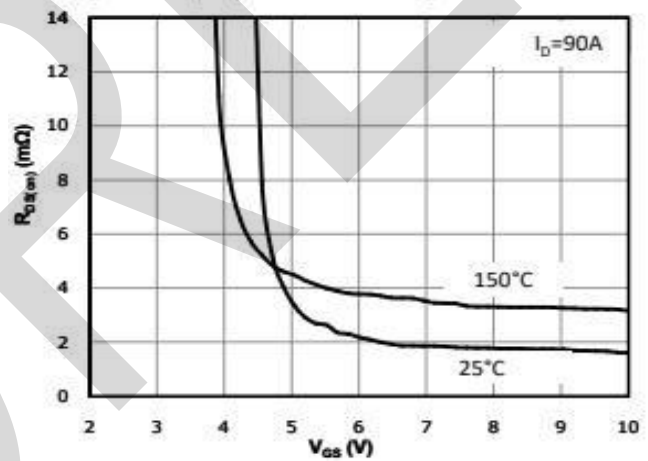


Fig 5: $R_{DS(on)}$ vs. Temperature

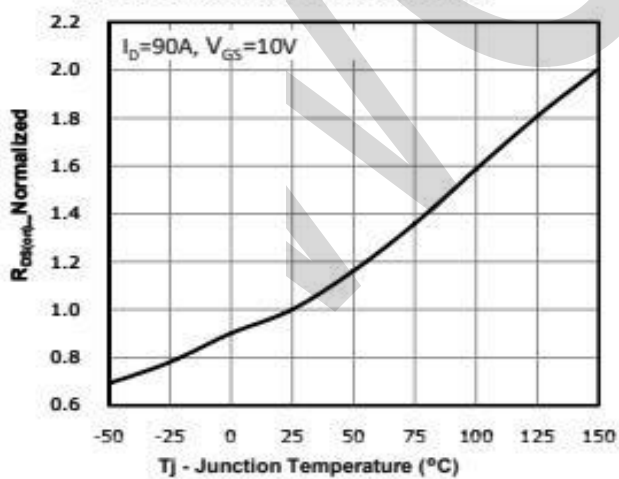
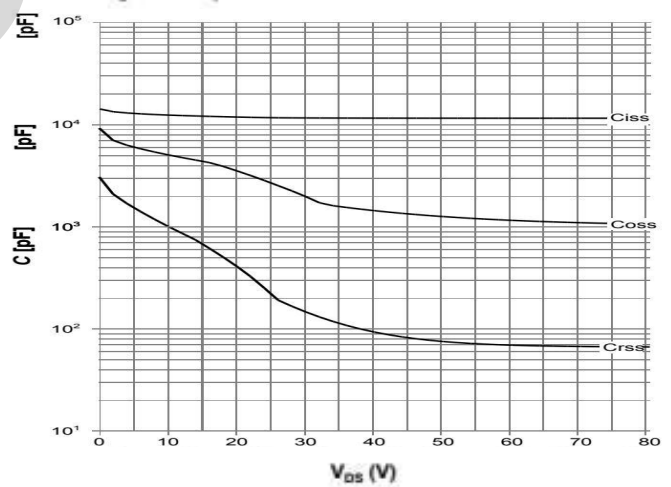


Fig 6: Capacitance Characteristics



Typical Performance Characteristics

Fig 7: $V_{gs(th)}$ vs. Temperature

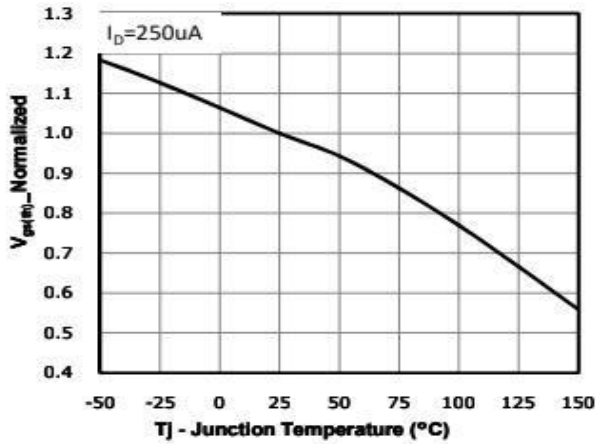


Fig 8: BV_{dss} vs. Temperature

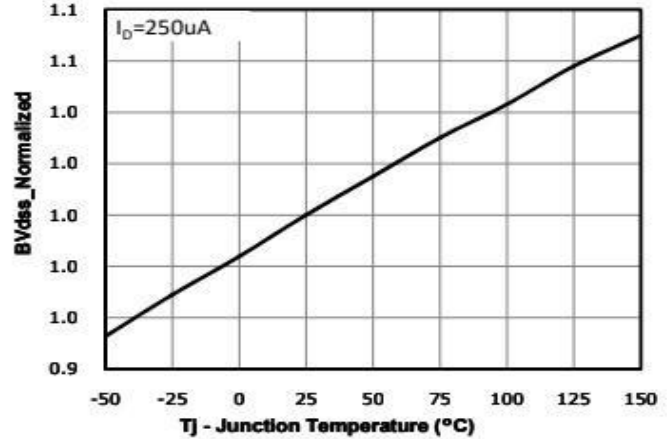


Fig 9: Gate Charge Characteristics

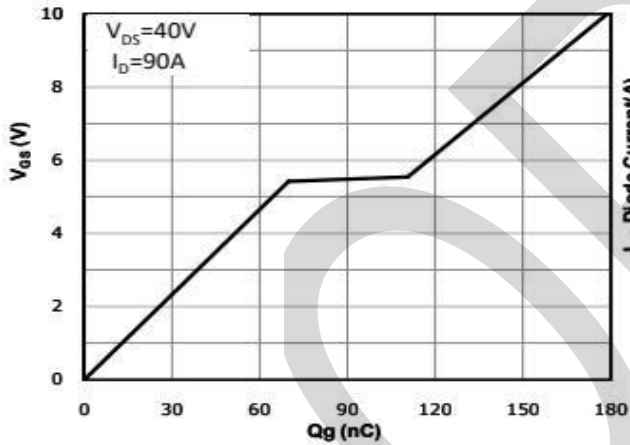


Fig 10: Body-diode Forward Characteristics

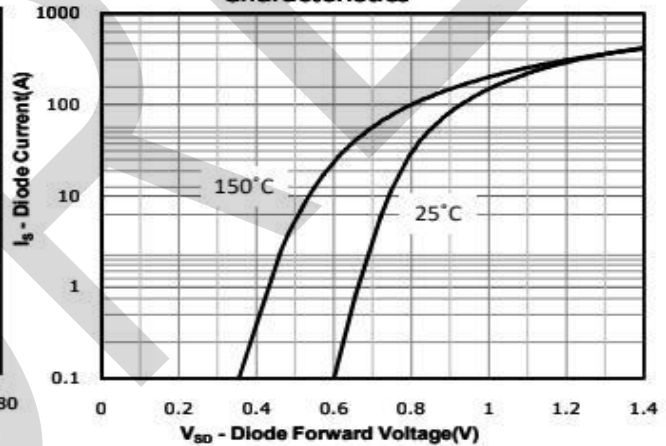


Fig 11: Power Dissipation

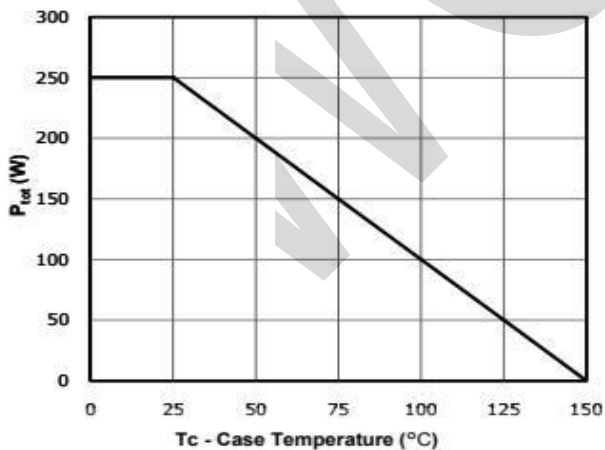
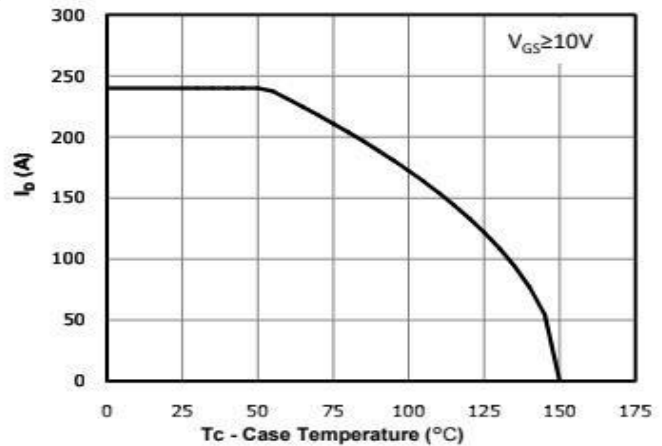


Fig 12: Drain Current Derating



Typical Performance Characteristics

Fig 13: Safe Operating Area

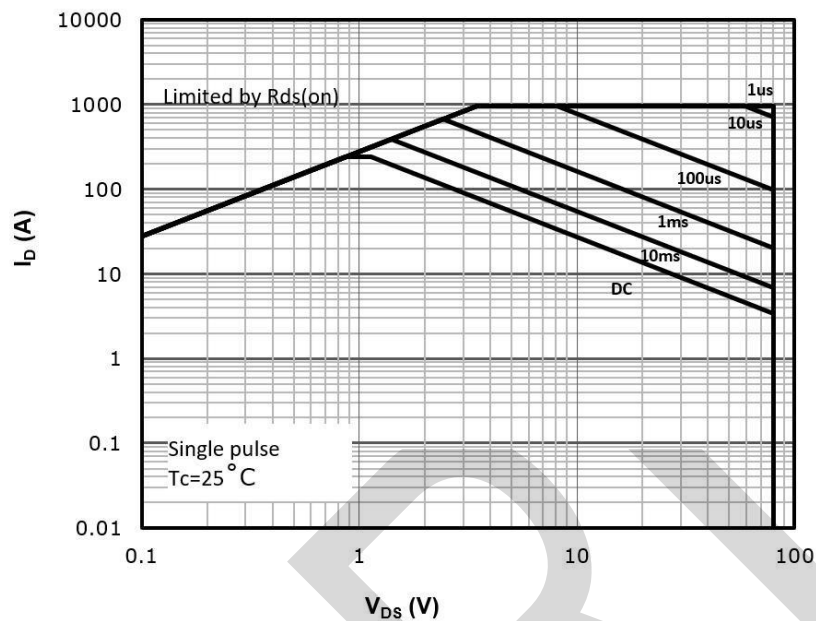
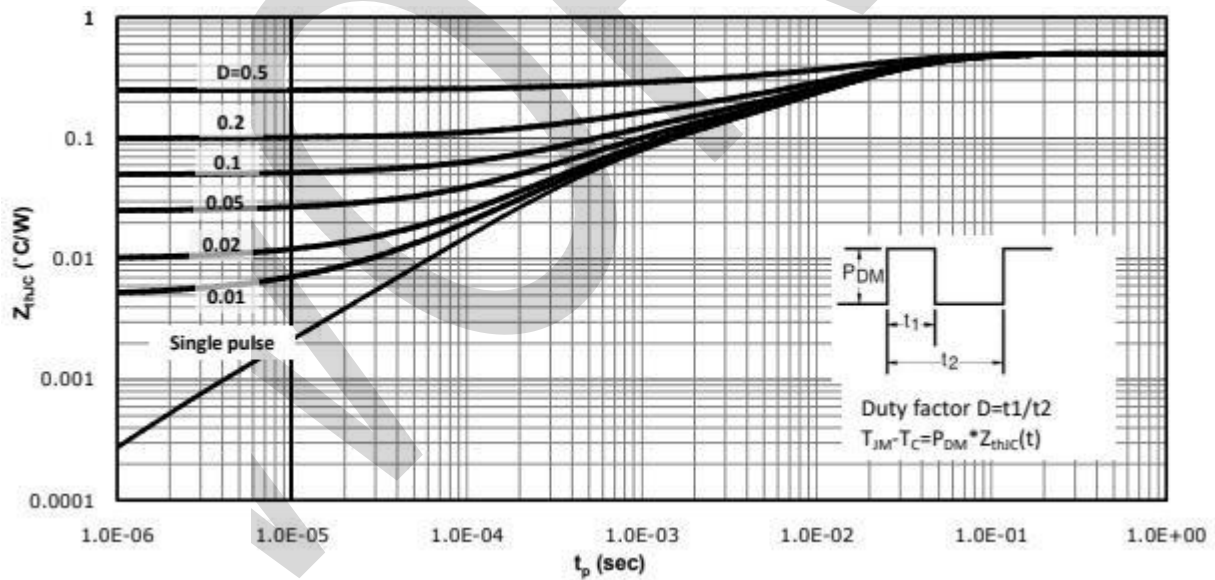


Fig 14: Max. Transient Thermal impedance



TOLL:(MM)

