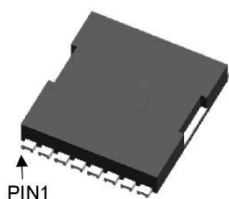


SGT N-channel Power MOSFET

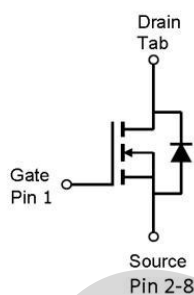
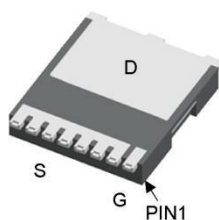
MTR3R8N08TL

TOLL

TOLL Top View



TOLL Bottom View



V_{DS}	80	V
$R_{DS(on),TYP@ V_{GS}=10V}$	2.7	mΩ
I_D	160	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 (Silicon limit)	170	A
		T _C =25°C (Package limit)	160	A
		T _C =100°C (Silicon limit)	110	A
IDM	Pulse drain current tested ①	T _C =25°C	480	A
EAS	Avalanche energy, single pulsed ②		1122	mJ
PD	Maximum power dissipation	T _C =25°C	208	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	0.6	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	53	°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	--	2.7	3.8	mΩ
g _{fs}	Transconductance	V _{DS} =5V, I _D =50A	170	--	--	S

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

C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =40V, f=1MHz	--	6575	--	pF
C _{oss}	Output Capacitance		--	1020	--	pF
C _{rss}	Reverse Transfer Capacitance		--	539	--	pF
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	--	1.7	--	Ω
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =50A, I _D =20A	--	74	--	nC
Q _{gs}	Gate-Source Charge		--	23	--	nC
Q _{gd}	Gate-Drain Charge		--	20	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{GS} =10V, V _{DS} =50V, R _L =3.0Ω, T _J =25°C	--	32	--	ns
Tr	Turn-on Rise Time		--	53	--	ns
Td(off)	Turn-Off Delay Time		--	59	--	ns
Tf	Turn-Off Fall Time		--	34	--	ns

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

VSD	Forward on voltage	I _{SD} =50A, V _{GS} =0V	--	0.8	1.2	V
Trr	Reverse Recovery Time	I _F =30A, di/dt=500A/μs	--	45	--	ns
Qrr	Reverse Recovery Charge	I _F =30A, di/dt=500A/μs	--	80	--	nC

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

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH, R_G = 25Ω. Part not recommended for use above this value

③ The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150°C.

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

Typical Performance Characteristics

Fig 1: Output Characteristics

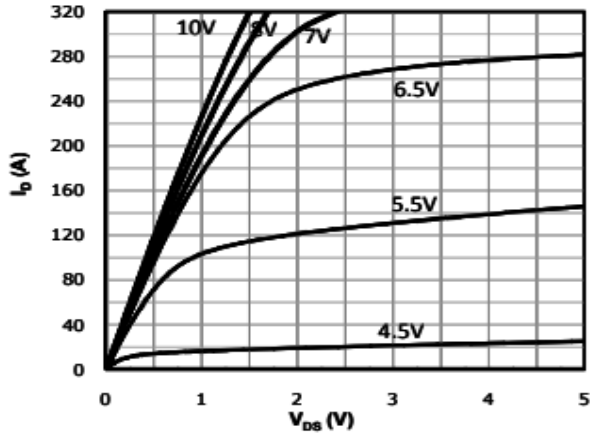


Fig 2: Transfer Characteristics

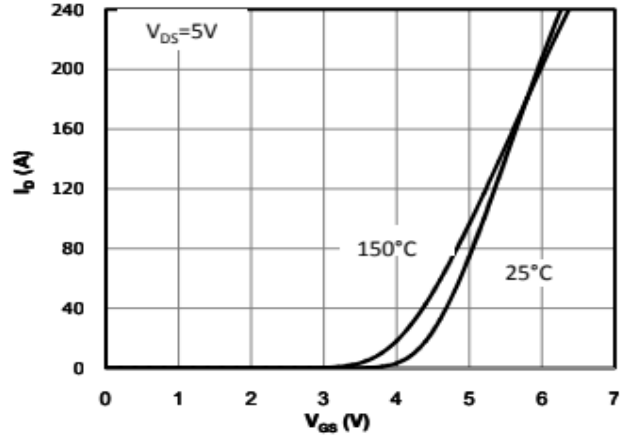


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

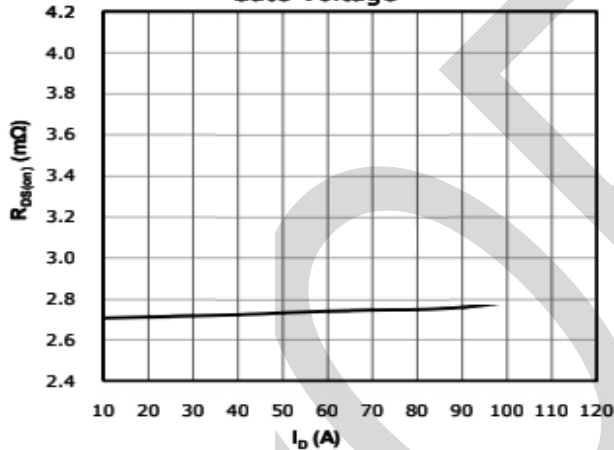


Fig 4: $R_{DS(on)}$ vs Gate Voltage

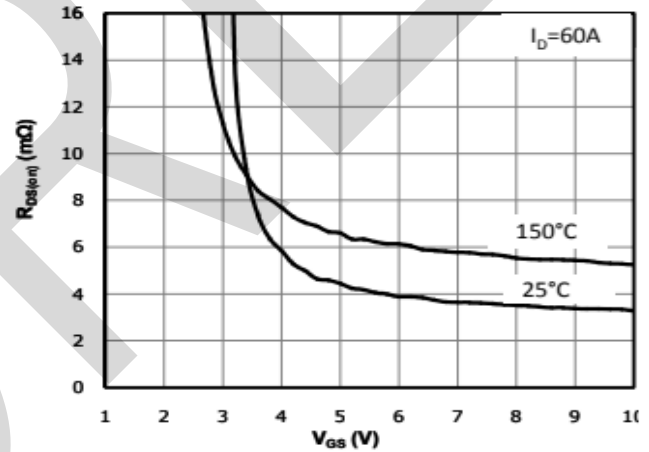


Fig 5: $R_{DS(on)}$ vs. Temperature

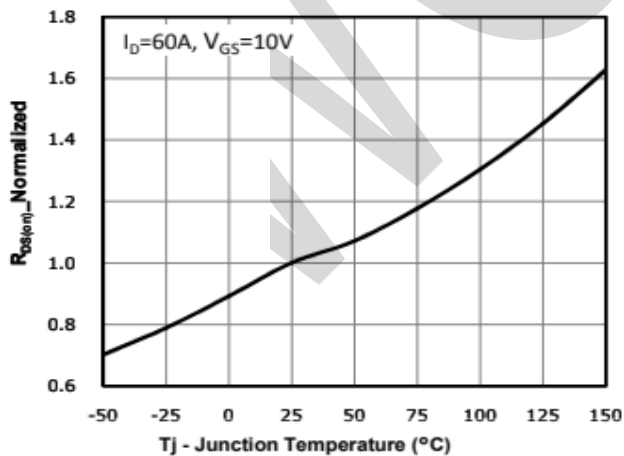
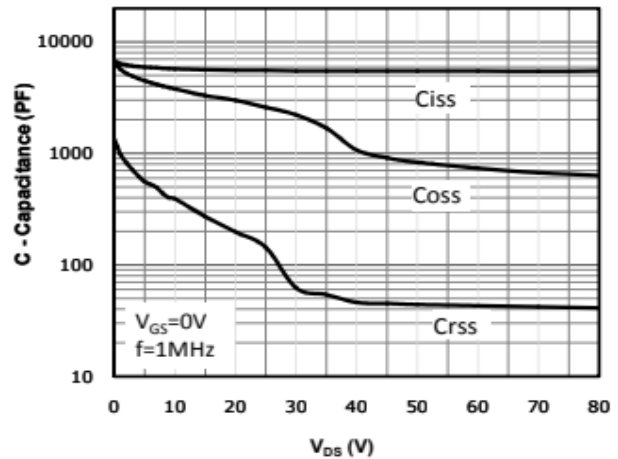


Fig 6: Capacitance Characteristics



Typical Performance Characteristics

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

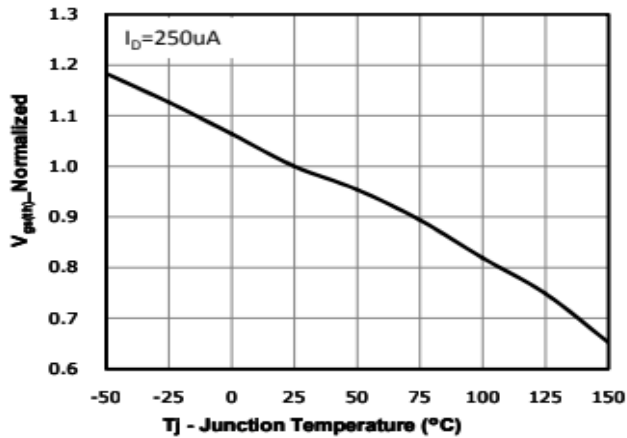


Fig 8: BV_{dss} vs. Temperature

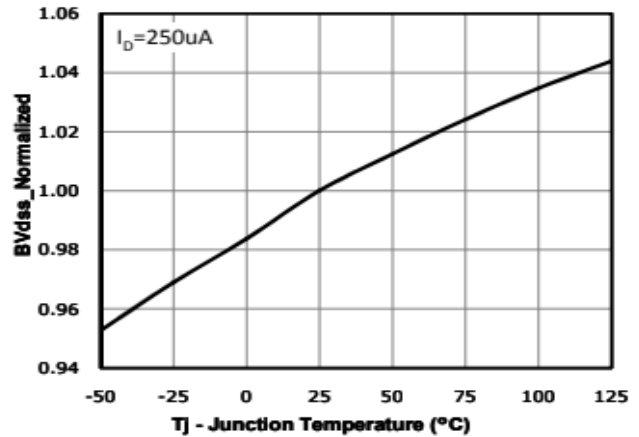


Fig 9: Gate Charge Characteristics

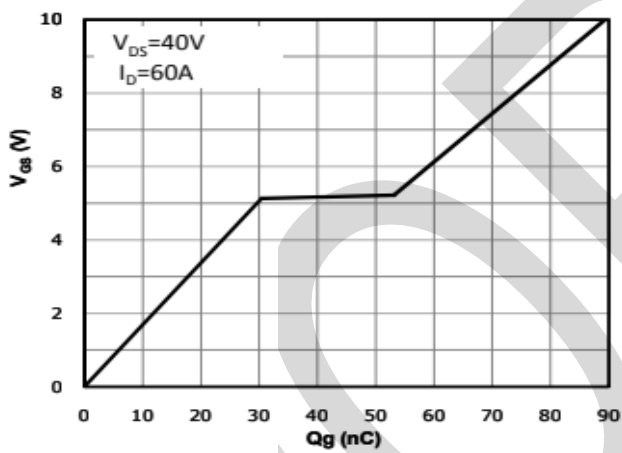


Fig 10: Body-diode Forward Characteristics

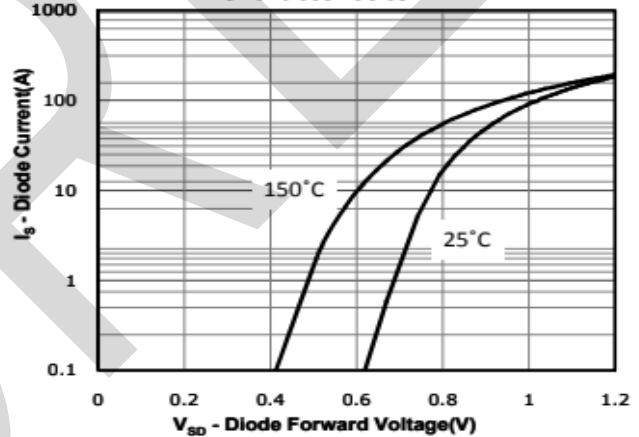


Fig 11: Power Dissipation

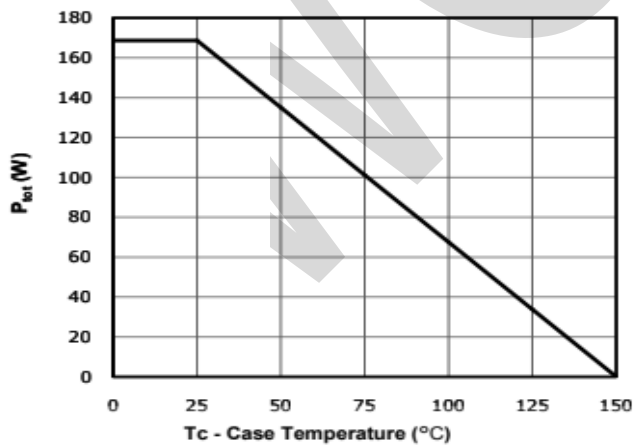
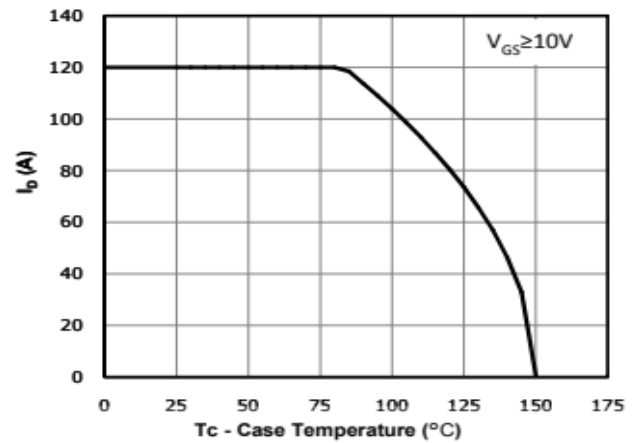


Fig 12: Drain Current Derating



Typical Performance Characteristics

Fig 13: Safe Operating Area

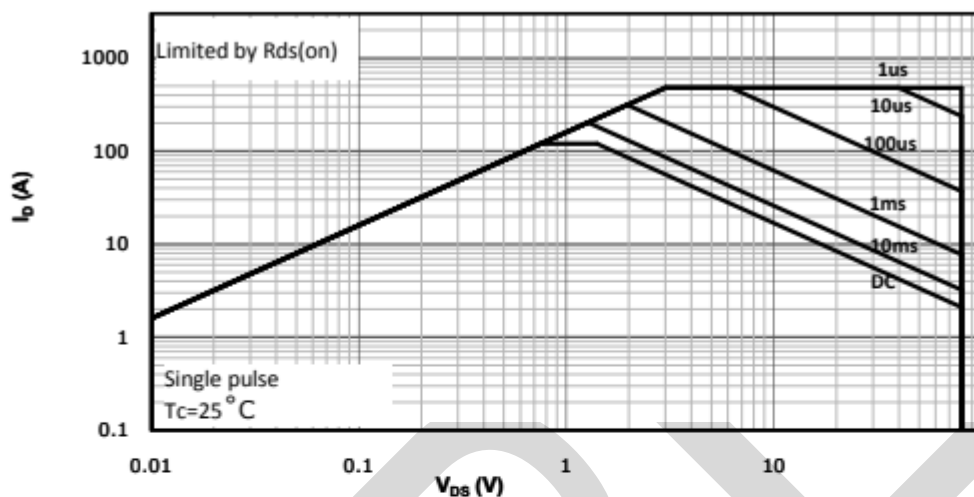
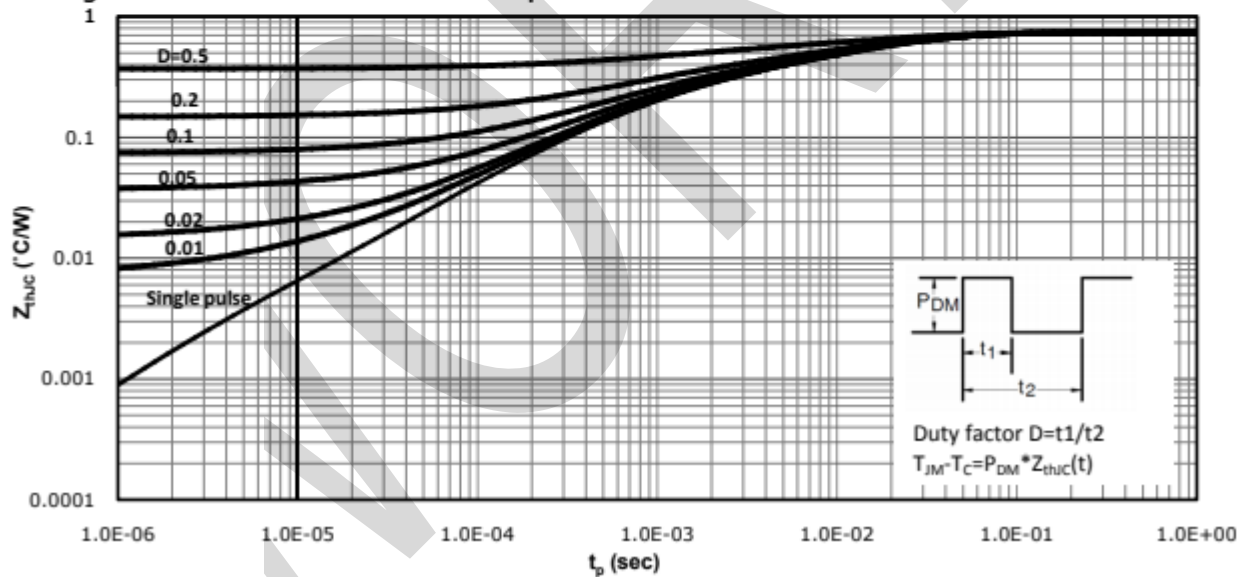


Fig 14: Max. Transient Thermal Impedance



TOLL:(MM)

