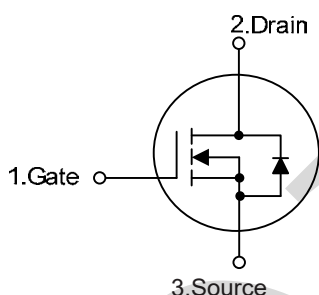
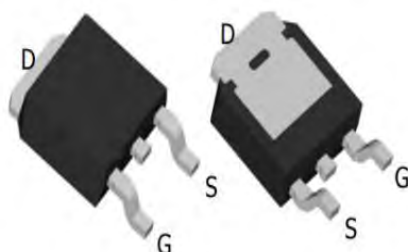


SGT N-channel Power MOSFET

MTR5R8N06D

TO-252



V_{DS}	60	V
$R_{DS(on),TYP@ V_{GS}=10V}$	4.6	m Ω
I_D	90	A

Features

- 1、Low on – resistance
- 2、Package TO-252
- 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		60	V
V_{GS}	Gate-Source voltage		± 20	V
I_{AS}	Avalanche Current	$T_C = 25^\circ\text{C}$	32	A
I_D	Continuous drain current @ $V_{GS}=10V$	$T_C = 25^\circ\text{C}$	90	A
		$T_C = 100^\circ\text{C}$	57	A
I_{DM}	Pulse drain current tested ①	$T_C = 25^\circ\text{C}$	269	A
E_{AS}	Avalanche energy, single pulsed ②		51	mJ
P_D	Maximum power dissipation	$T_C = 25^\circ\text{C}$	83	W
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	1.2	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	45	°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	60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V, 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 ④	V _{GS} =10V, I _D =20A	--	4.6	5.8	mΩ
		V _{GS} =4.5V, I _D =15A	--	6.0	7.5	mΩ
g _{fs}	Forward Transconductance	V _{DS} = 5V, I _D = 20A	--	85	--	S

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

C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V , f=1MHz	--	2122	--	pF
C _{oss}	Output Capacitance		--	440	--	pF
C _{rss}	Reverse Transfer Capacitance		--	4.4	--	pF
R _g	Gate Resistance	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	--	1.4	--	Ω
Q _g (10V)	Total Gate Charge	V _{DS} =30V, I _D =20A , V _{GS} =10V	--	31	--	nC
Q _{gs}	Gate-Source Charge		--	4.8	--	nC
Q _{gd}	Gate-Drain Charge		--	5.4	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =30V, V _{GS} =10V R _L =1.5Ω, R _G =6Ω,	--	8.0	--	ns
Tr	Turn-on Rise Time		--	5.1	--	ns
Td(off)	Turn-Off Delay Time		--	38	--	ns
Tf	Turn-Off Fall Time		--	14.8	--	ns

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

VSD	Forward on voltage	I _S =1A, V _{GS} =0V	--	0.7	1.0	V
I _S	Diode Forward Current		--	--	83	A
Trr	Reverse Recovery Time	I _F =20A	--	37	--	ns
Qrr	Reverse Recovery Charge	di/dt=100A/μs	--	43	--	nC

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

② Limited by T_{Jmax}, starting T_J = 25°C, L = 100uH, V_{GS} = 10V, V_{DS} = 30V, 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 Characteristics

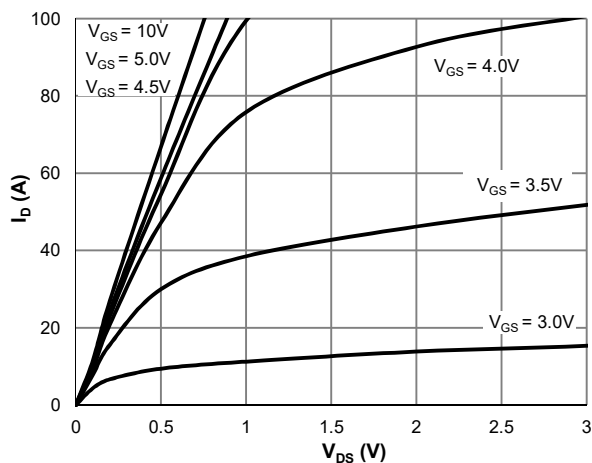


Figure 1: Saturation Characteristics

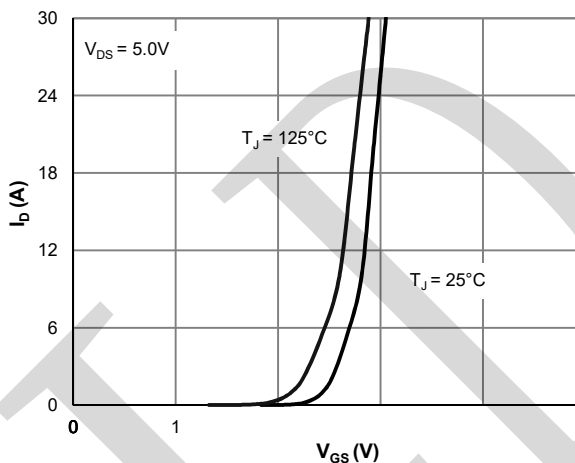


Figure 2: Transfer Characteristics

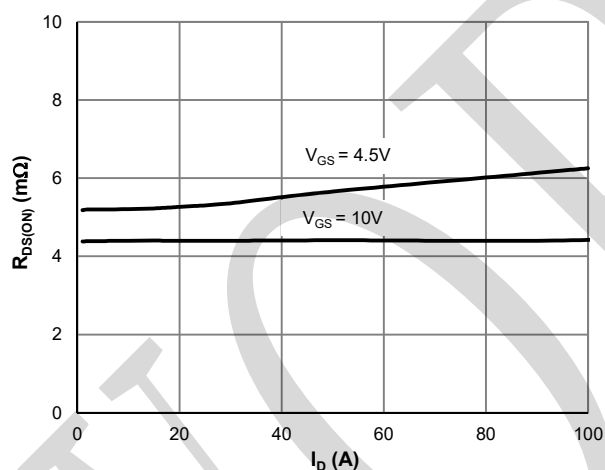


Figure 3: $R_{DS(ON)}$ vs. Drain Current

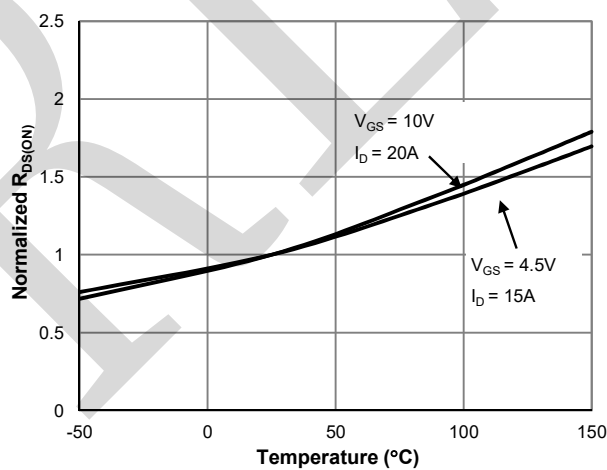


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

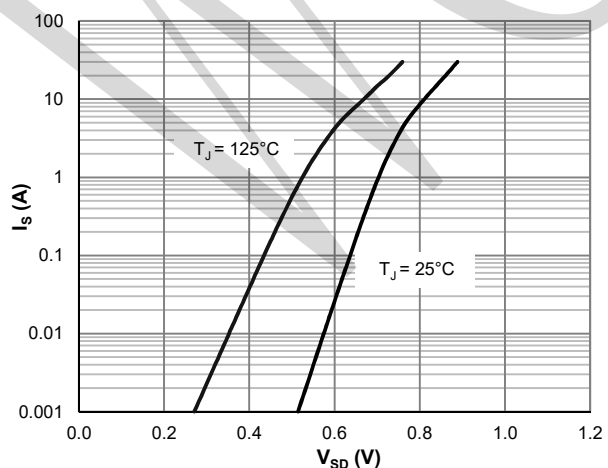


Figure 5: Body-Diode Characteristics

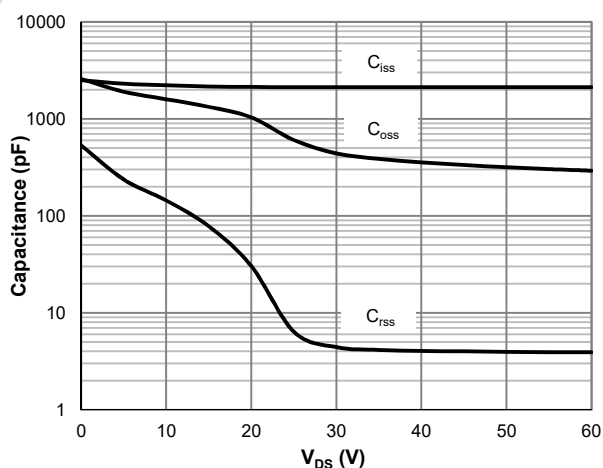


Figure 6: Capacitance Characteristics

Typical Characteristics

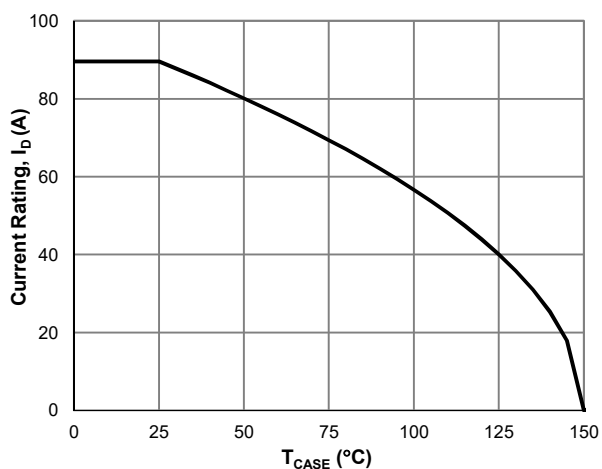


Figure 7: Current De-rating

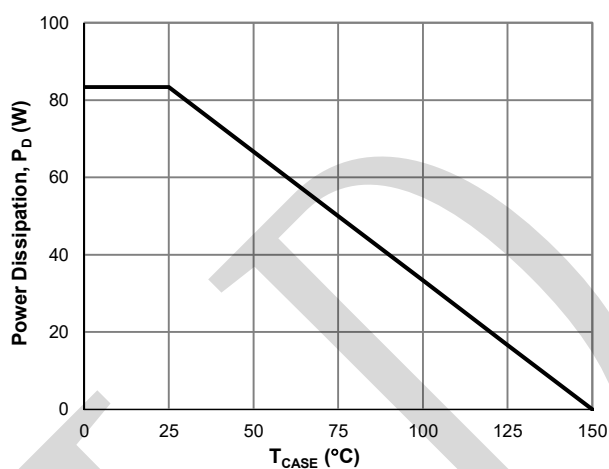


Figure 8: Power De-rating

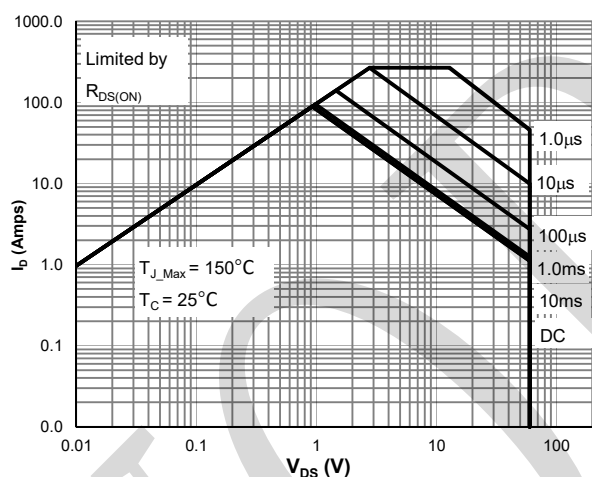


Figure 9: Maximum Safe Operating Area

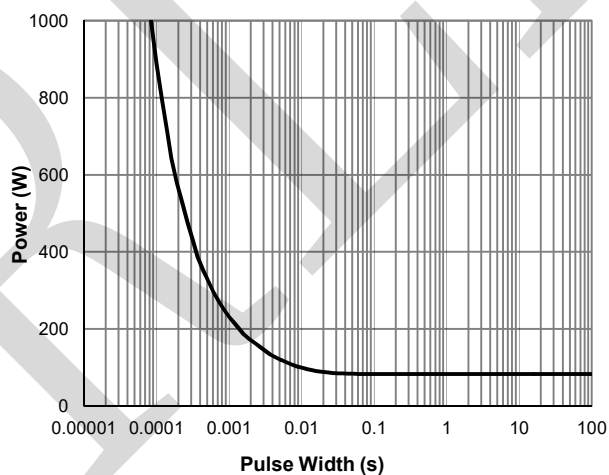


Figure 10: Single Pulse Power Rating, Junction-to-Case

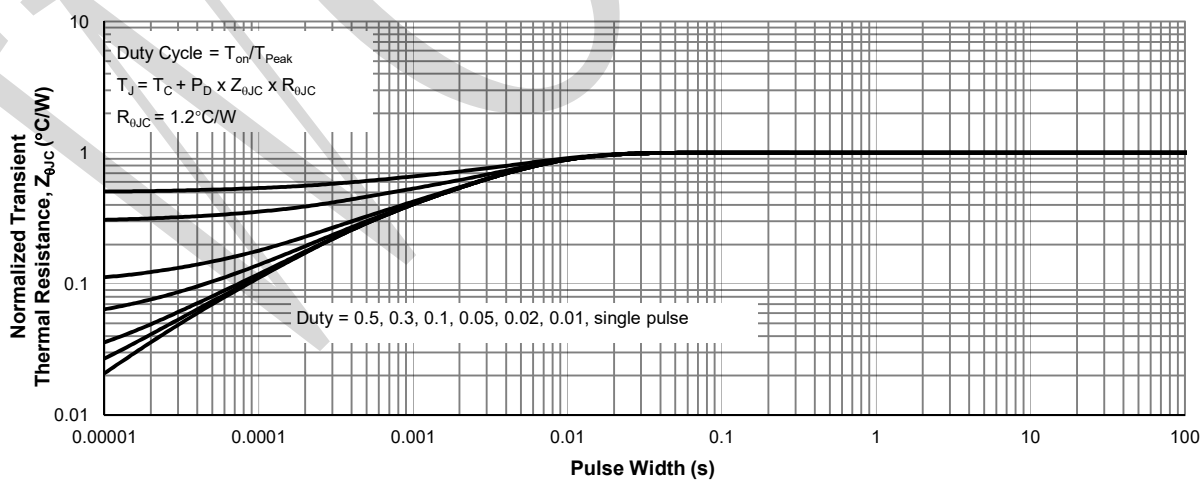
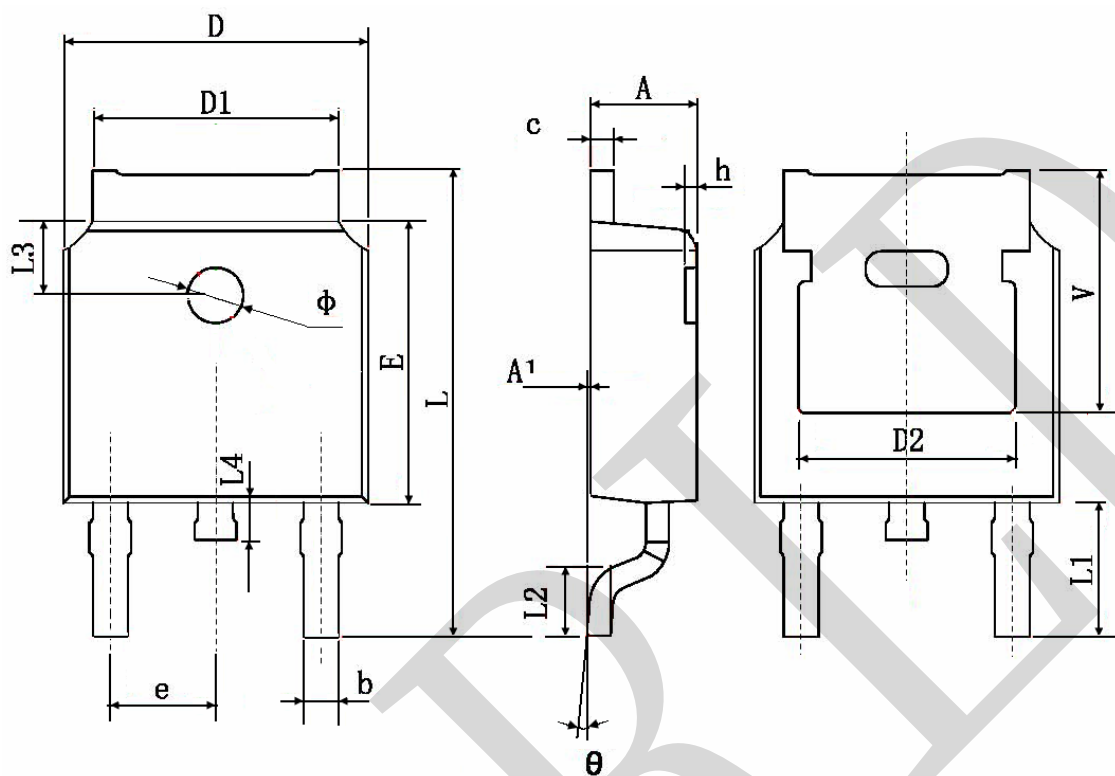


Figure 11: Normalized Maximum Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	