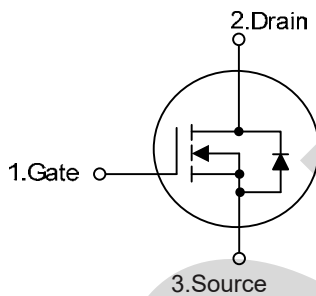
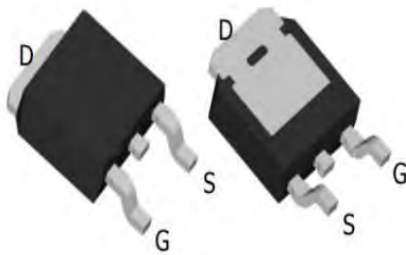


SGT N-channel Power MOSFET

MTR017N10D

TO-252



V_{DS}	100	V
$R_{DS(on),TYP@ V_{GS}=10V}$	14	m Ω
I_D	40	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_{AS}	Avalanche Current	4.3	A	
I_D	Continuous drain current @ $V_{GS}=10V$	$T_C=25^\circ C$	40	A
		$T_C=100^\circ C$	25	A
I_{DM}	Pulse drain current tested ①	$T_C=25^\circ C$	116	A
E_{AS}	Avalanche energy, single pulsed ②	0.92	mJ	
P_D	Maximum power dissipation	$T_C=25^\circ C$	52	W
T_{STG}, T_J	Storage and Junction Temperature Range	-55 to 150	$^\circ C$	

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	1.8	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	42	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
--------	-----------	-----------	------	------	------	------

Static Electrical Characteristics @T_j=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} =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	1.2	1.9	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance ④	V _{GS} =10V, I _D =10A	--	14	17	mΩ
		V _{GS} =4.5V, I _D =6A	--	18	23	mΩ
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =20A	--	48	--	S

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V , f=1MHz	--	769	--	pF
C _{oss}	Output Capacitance		--	171	--	pF
C _{rss}	Reverse Transfer Capacitance		--	5.1	--	pF
Q _g (10V)	Total Gate Charge	V _{DS} =50V, I _D =10A, V _{GS} =10V	--	12.7	--	nC
Q _{gs}	Gate-Source Charge		--	2.1	--	nC
Q _{gd}	Gate-Drain Charge		--	3.3	--	nC
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	1.9	--	Ω

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =50V, V _{GS} =10V, R _L =2.5Ω, R _G =6Ω	--	4.3	--	ns
Tr	Turn-on Rise Time		--	5.1	--	ns
Td(off)	Turn-Off Delay Time		--	16.7	--	ns
Tf	Turn-Off Fall Time		--	8.7	--	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	T _C = 25°C	--	--	52	A
T _{rr}	Reverse Recovery Time (Note1)	I _F =15A , di/dt=100A/μs	--	39	--	ns
Q _{rr}	Reverse Recovery Charge (Note1)		--	30	--	nC

NOTE:

- ① Computed continuous current assumes the condition of T_J_Max while the actual continuous current depends on the thermal & electro-mechanical application board design.
- ② This single-pulse measurement was taken under T_J_Max = 150°C.
- ③ This single-pulse measurement was taken under the following condition [L = 100uH, V_{GS} = 10V, V_{DS} = 50V] while its value is limited by T_J_Max = 150°C.
- ④ The power dissipation PD is based on T_J_Max = 150°C.
- ⑤ This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

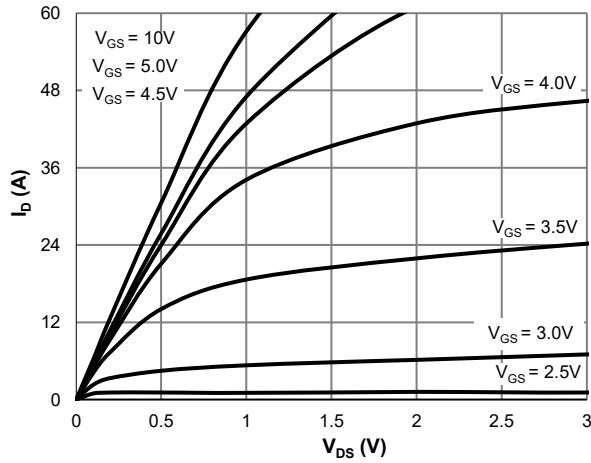


Figure 1: Saturation Characteristics

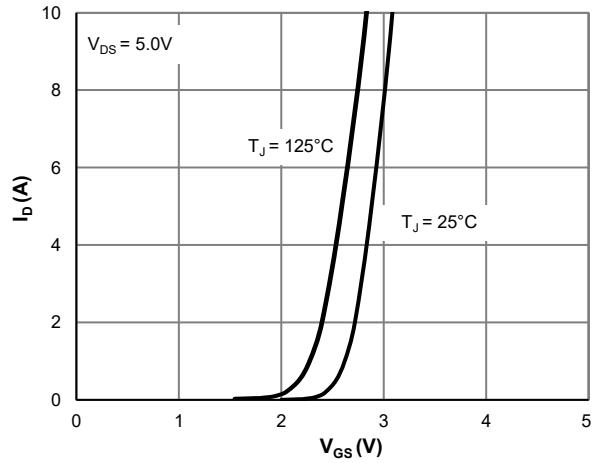


Figure 2: Transfer Characteristics

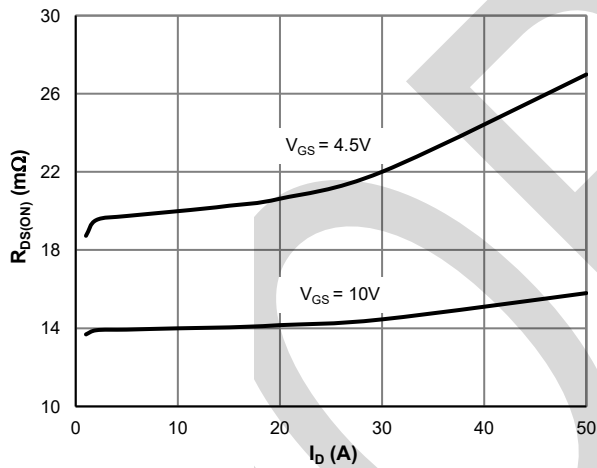


Figure 3: $R_{DS(ON)}$ vs. Drain Current

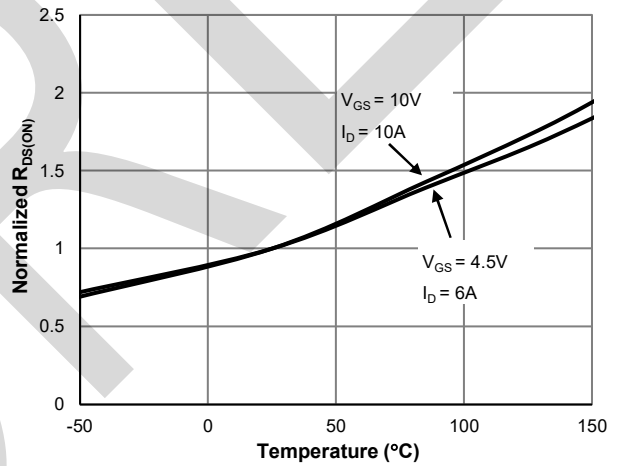


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

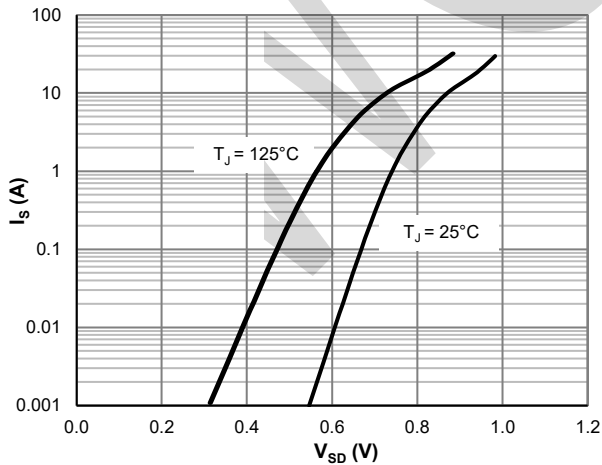


Figure 5: Body-Diode Characteristics

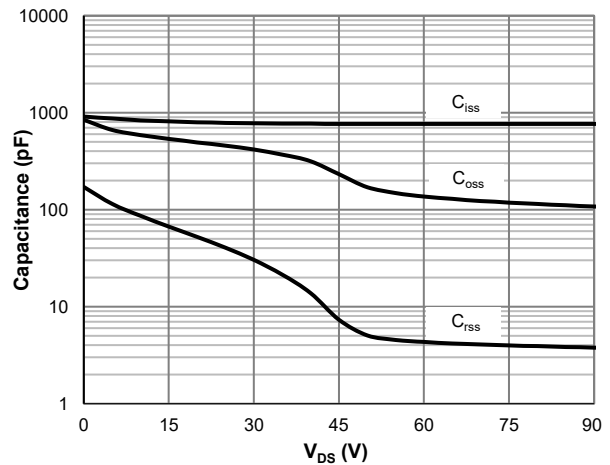


Figure 6: Capacitance Characteristics

Typical Characteristics

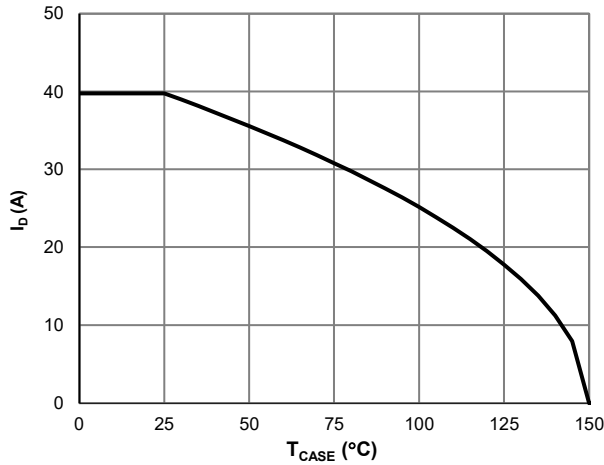


Figure 7: Current De-rating

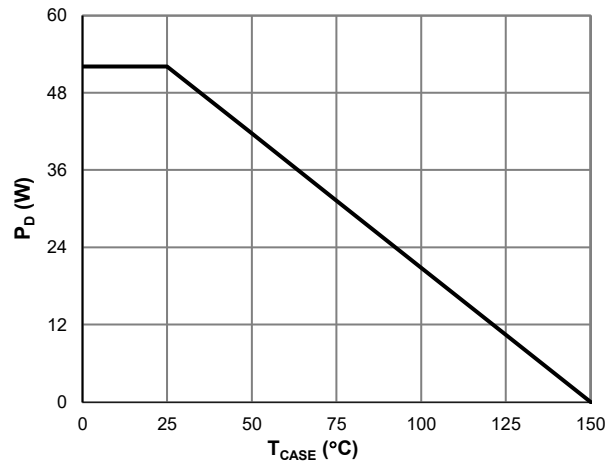


Figure 8: Power De-rating

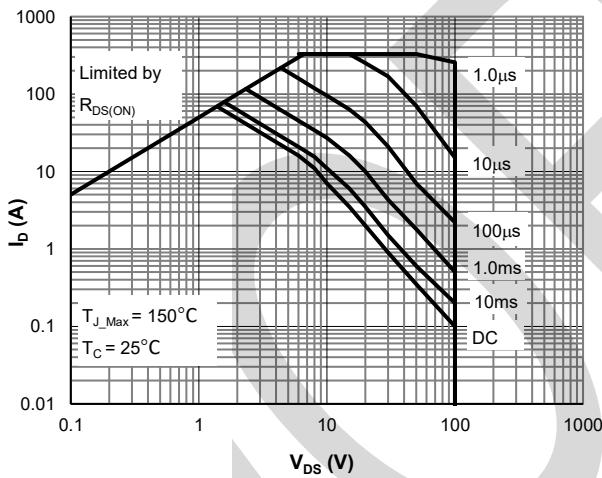


Figure 9: Maximum Safe Operating Area

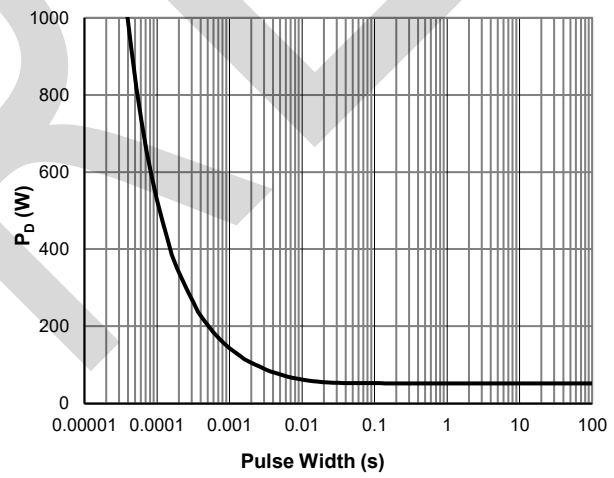


Figure 10: Single Pulse Power Rating, Junction-to-Case

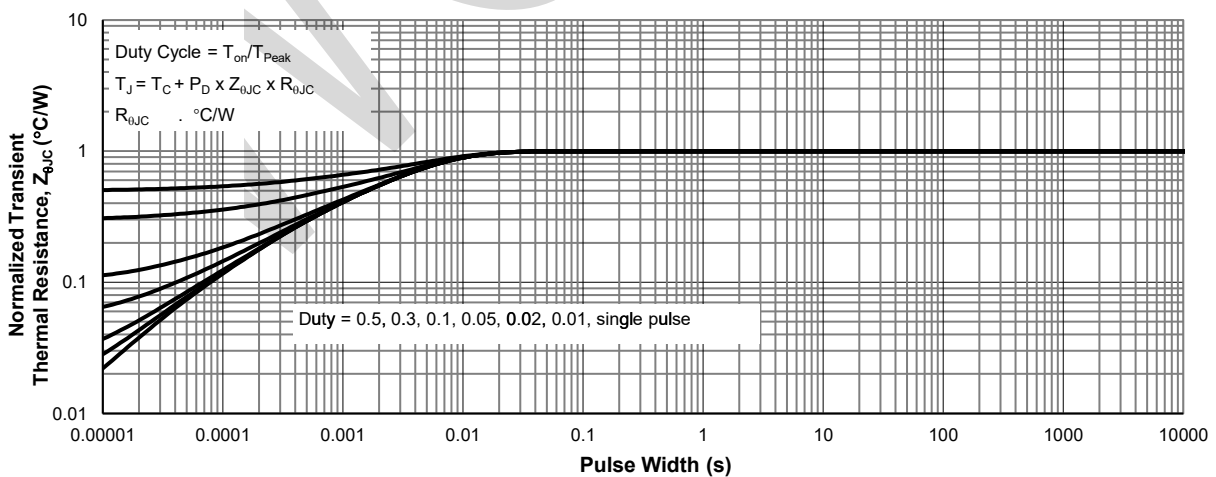
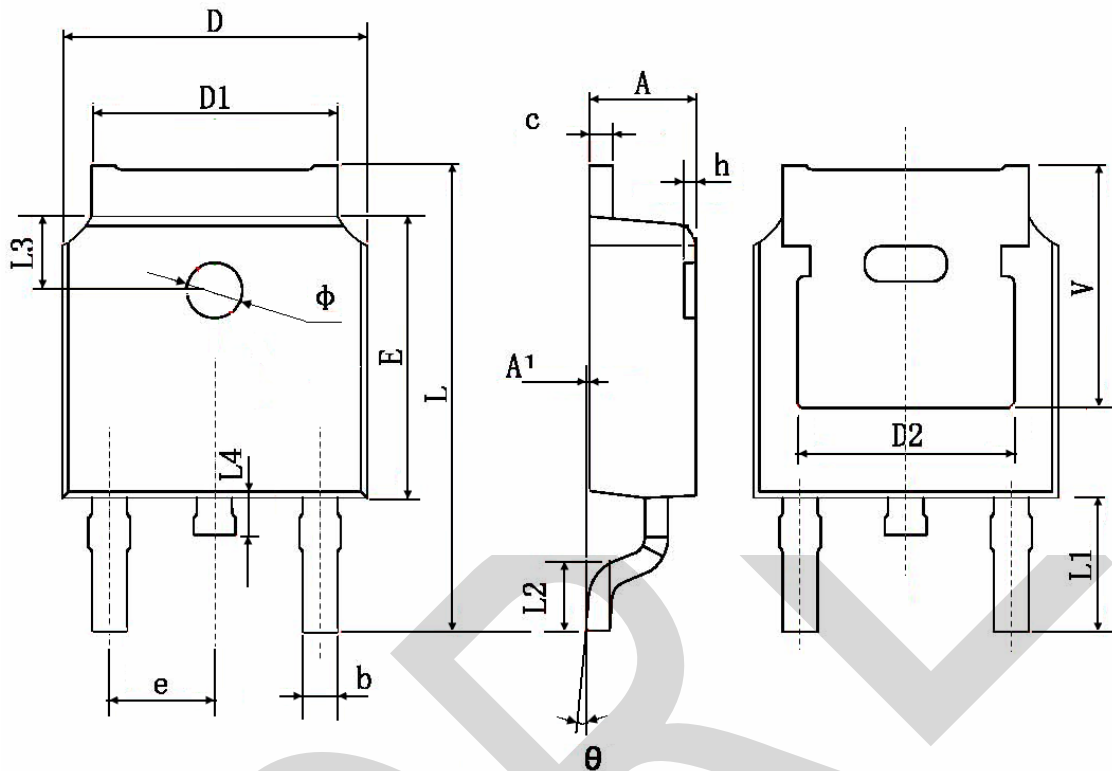


Figure 11: Normalized Maximum Transient Thermal Impedance

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.	