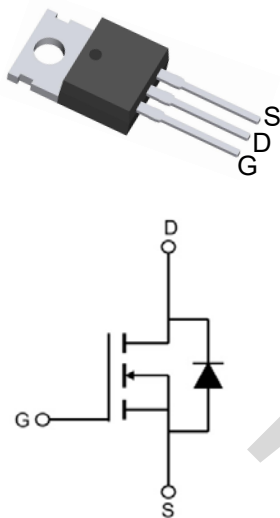


SGT N-channel Power MOSFET

MTR006N10CT
TO-220CB



V_{DS}	100	V
$R_{DS(on),TYP@ V_{GS}=10V}$	5.2	mΩ
I_D	120	A

Features

- 1、Low on – resistance
- 2、Package TO-220CB
- 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		100	V
VGS	Gate-Source voltage		±20	V
ID	Continuous drain current @VGS=10V	$T_C = 25^\circ\text{C}$	120	A
		$T_C = 100^\circ\text{C}$	75	A
IDM	Pulse drain current tested	$T_C = 25^\circ\text{C}$	345	A
EAS	Avalanche energy, single pulsed		130	mJ
IAS	Avalanche Current		51	A
PD	Maximum power dissipation	$T_C = 25^\circ\text{C}$	208	W
		$T_C = 100^\circ\text{C}$	83	W
TSTG,TJ	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJA}	Thermal Resistance, Junction-to-Ambient	45	°C/W
R _{θJC}	Thermal Resistance, Junction-to-Case	0.6	°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	100	108	--	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	V _{GS} =10V, I _D =20A	--	5.2	6.0	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A	--	81	--	S

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V , f=1MHz	--	2369	--	pF
C _{oss}	Output Capacitance		--	545	--	pF
C _{rss}	Reverse Transfer Capacitance		--	11.6	--	pF
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V , f=1MHz	--	2.0	--	Ω
Q _g (10V)	Total Gate Charge	V _{DS} =50V, I _D =20A , V _{GS} =10V	--	38	--	nC
Q _{gs}	Gate-Source Charge		--	7.9	--	nC
Q _{gd}	Gate-Drain Charge		--	9.2	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =50V, R _g =6.0Ω, V _{GS} =10V, R _L =2.5Ω	--	12.6	--	ns
Tr	Turn-on Rise Time		--	29	--	ns
Td(off)	Turn-Off Delay Time		--	40	--	ns
Tf	Turn-Off Fall Time		--	44	--	ns

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

I _s	Diode Forward Current		--	--	160	A
V _{SD}	Forward on voltage	V _{GS} =0V, I _s =1A	--	0.7	1.0	V
T _{rr}	Reverse Recovery Time	I _F =20A, di/dt=100A/μs	--	60	--	ns
Q _{rr}	Reverse Recovery Charge		--	110	--	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 = 100μH, 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

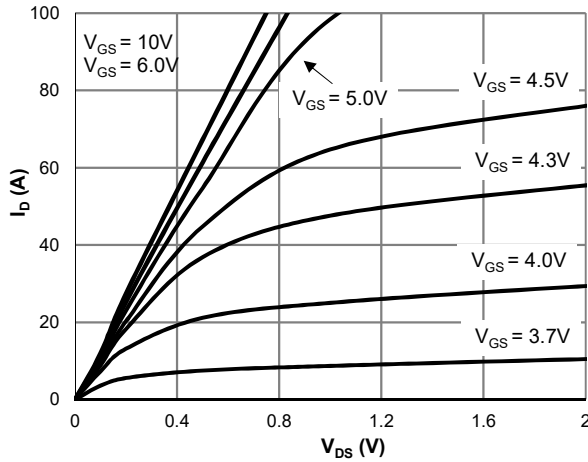


Figure 1: Saturation Characteristics

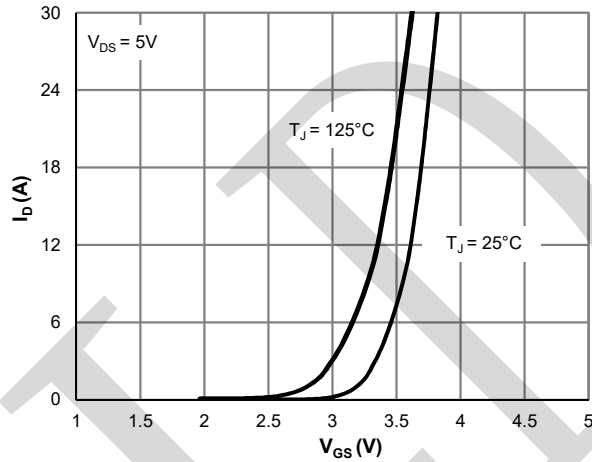


Figure 2: Transfer Characteristics

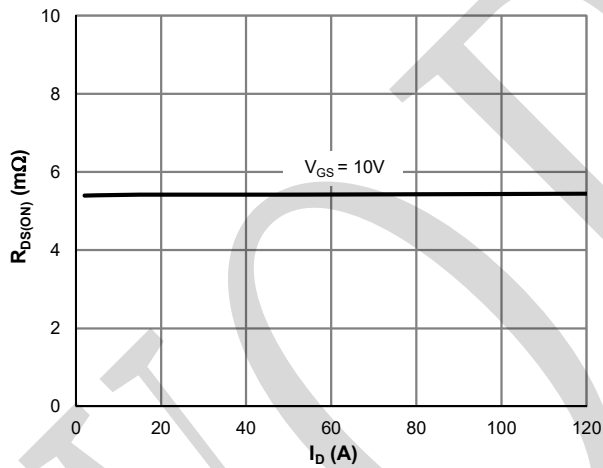


Figure 3: $R_{DS(ON)}$ vs. Drain Current

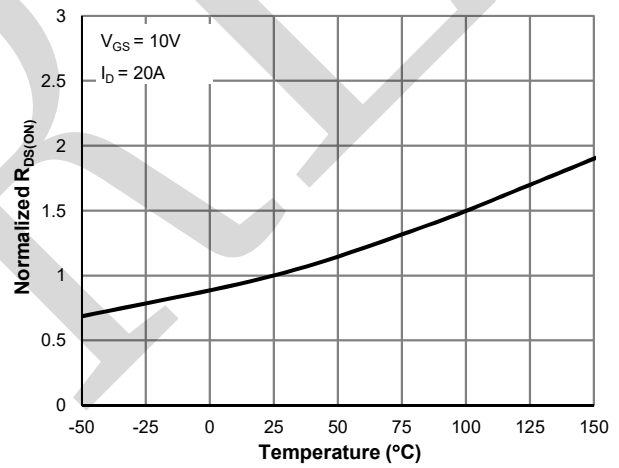


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

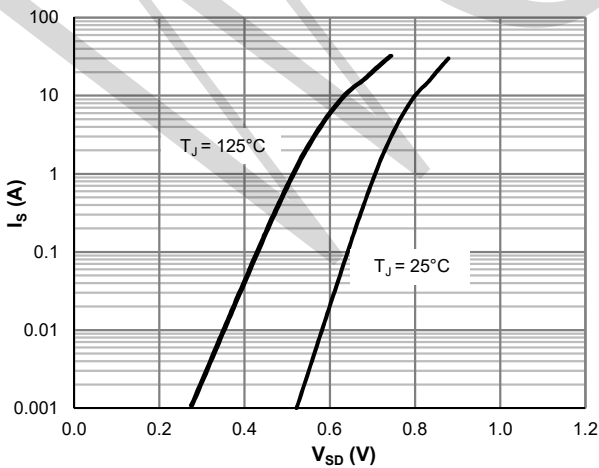


Figure 5: Body-Diode Characteristics

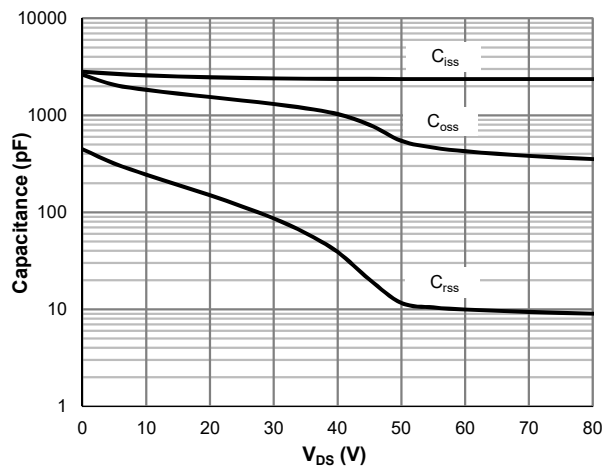


Figure 6: Capacitance Characteristics

Typical Characteristics

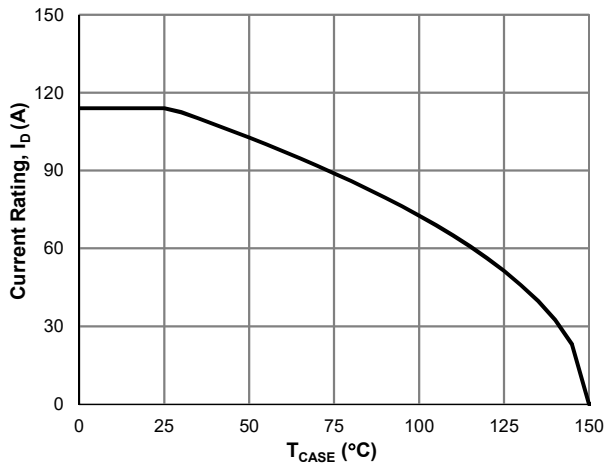


Figure 7: Current De-rating

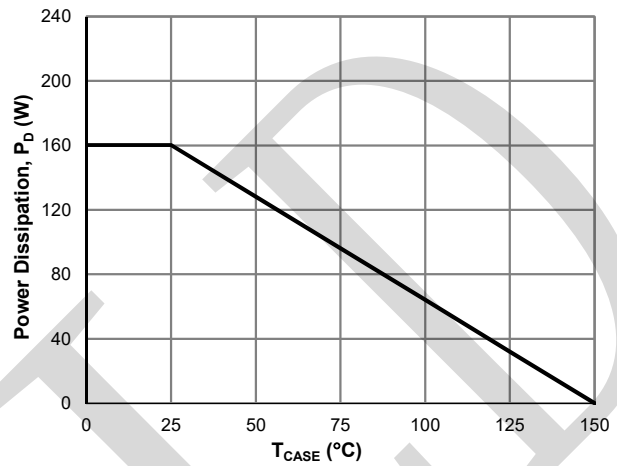


Figure 8: Power De-rating

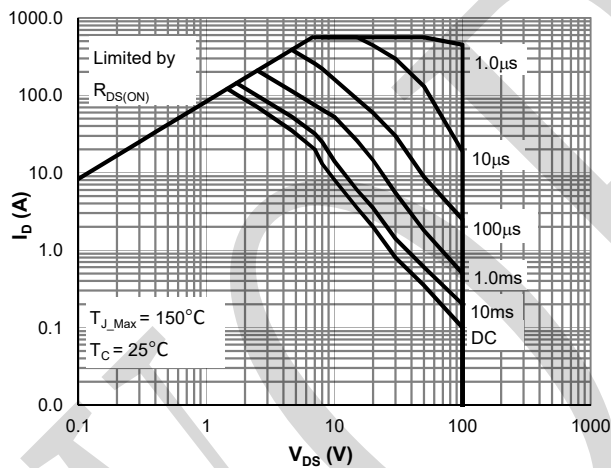


Figure 9: Maximum Safe Operating Area

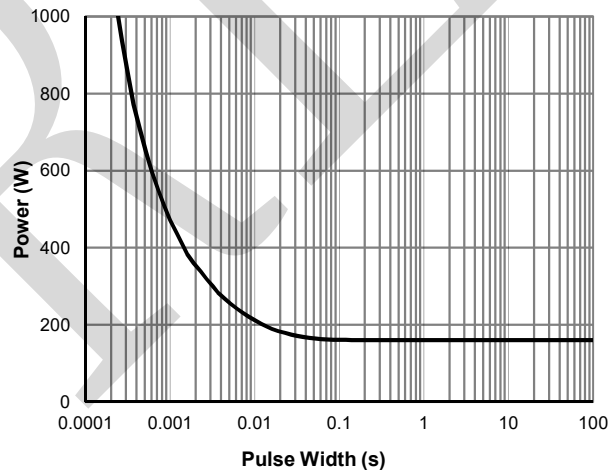


Figure 10: Single Pulse Power Rating, Junction-to-Case

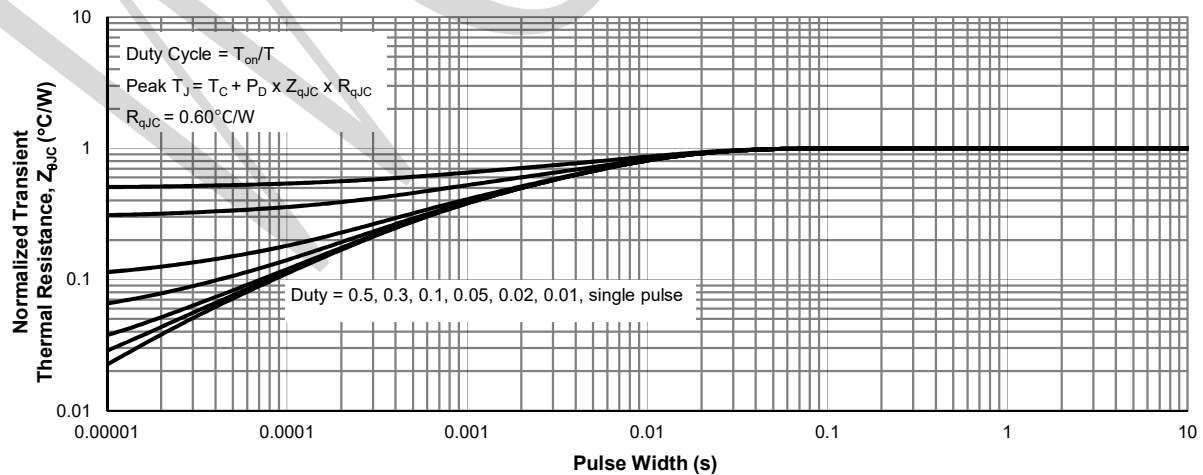
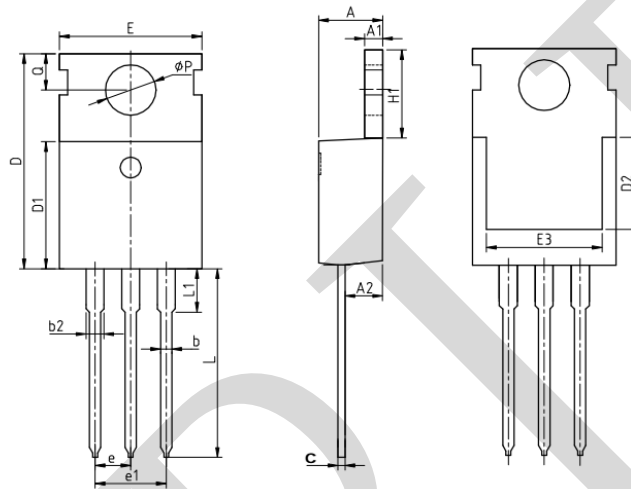


Figure 11: Normalized Maximum Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220CB



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.25	1.30	1.45
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b2	1.17	1.27	1.47
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50		
E	9.70	10.00	10.30
E3	7.00		
e	2.54 BSC		
e1	5.08 BSC		
H1	6.25	6.50	6.85
L	12.75	13.50	13.80
L1		3.10	3.40
ΦP	3.40	3.60	3.80
Q	2.60	2.80	3.00