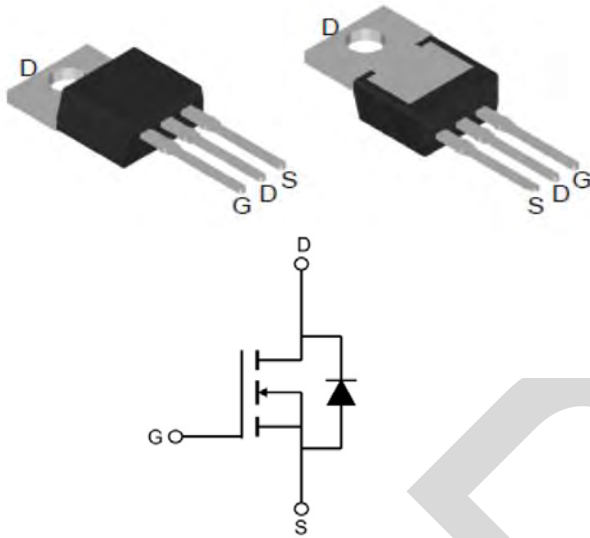


SGT N-channel Power MOSFET

TO-220AB
MTR10R5N15CT



V_{DS}	150	V
$R_{DS(on),TYP@ V_{GS}=10V}$	8.9	mΩ
I_D	120	A

Features

- 1、Low on – resistance
- 2、Package TO-220AB
- 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		150	V
VGS	Gate-Source voltage		±20	V
ID	Continuous drain current @VGS=10V	$T_C = 25^\circ\text{C}$	120	A
		$T_C = 100^\circ\text{C}$	55	A
IDM	Pulse drain current tested	$T_C = 25^\circ\text{C}$	335	A
EAS	Avalanche energy, single pulsed		211	mJ
IAS	Avalanche Current		65	A
PD	Maximum power dissipation	$T_C = 25^\circ\text{C}$	180	W
		$T_C = 100^\circ\text{C}$	71	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	0.55	°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	150	165	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =120V, 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	--	8.9	10.5	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A	--	20	--	S

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

C _{iss}	Input Capacitance	V _{DS} =75V, V _{GS} =0V , f=1MHz	--	3609	--	pF
C _{oss}	Output Capacitance		--	348	--	pF
C _{rss}	Reverse Transfer Capacitance		--	4.8	--	pF
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V , f=1MHz	--	1.2	--	Ω
Q _g (10V)	Total Gate Charge	V _{DS} =75V, I _D =20A , V _{GS} =10V	--	47	--	nC
Q _{gs}	Gate-Source Charge		--	15	--	nC
Q _{gd}	Gate-Drain Charge		--	8	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =75V, R _g =6.0Ω,, V _{GS} =10V R _L =3.75Ω,	--	18	--	ns
Tr	Turn-on Rise Time		--	19	--	ns
Td(off)	Turn-Off Delay Time		--	50	--	ns
Tf	Turn-Off Fall Time		--	17	--	ns

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

I _s	Diode Forward Current		--	--	179	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	--	93	--	ns
Q _{rr}	Reverse Recovery Charge		--	363	--	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} = 75V] 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

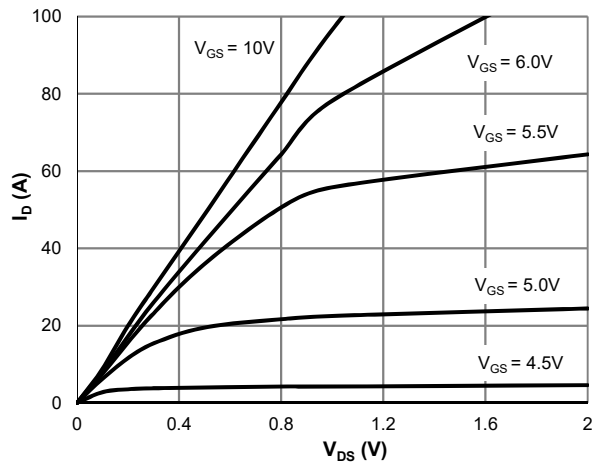


Figure 1: Saturation Characteristics

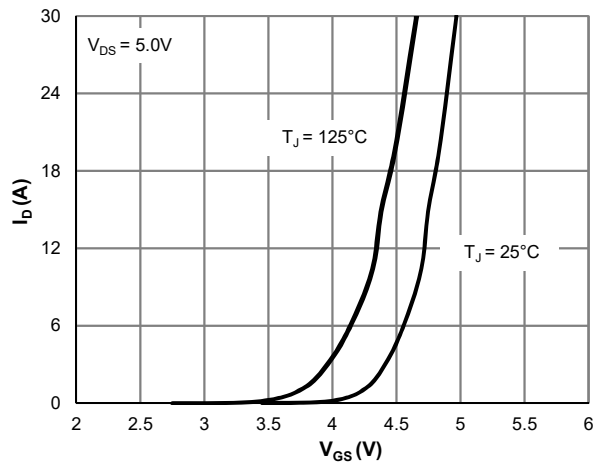


Figure 2: Transfer Characteristics

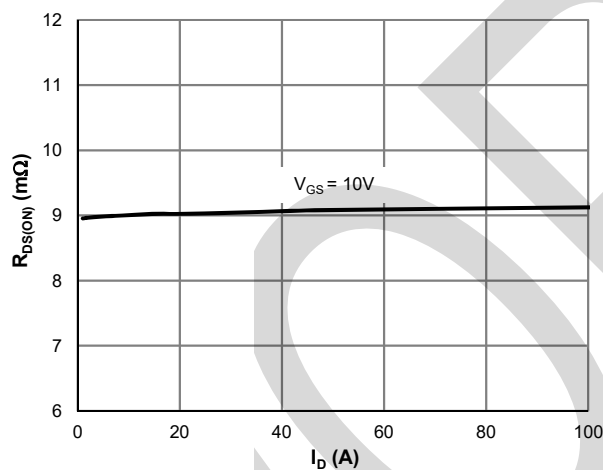


Figure 3: $R_{DS(ON)}$ vs. Drain Current

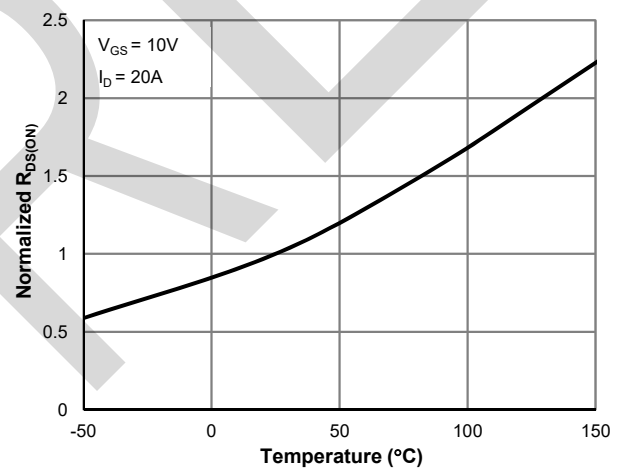


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

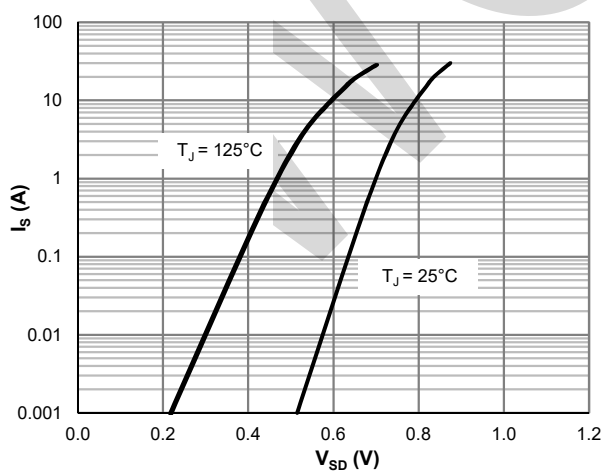


Figure 5: Body-Diode Characteristics

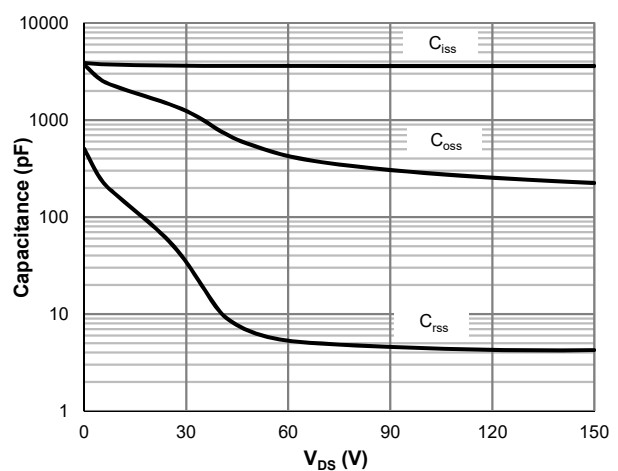


Figure 6: Capacitance Characteristics

Typical Characteristics

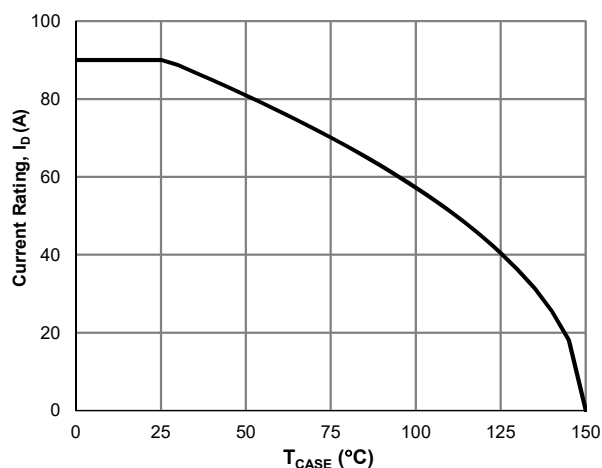


Figure 7: Current De-rating

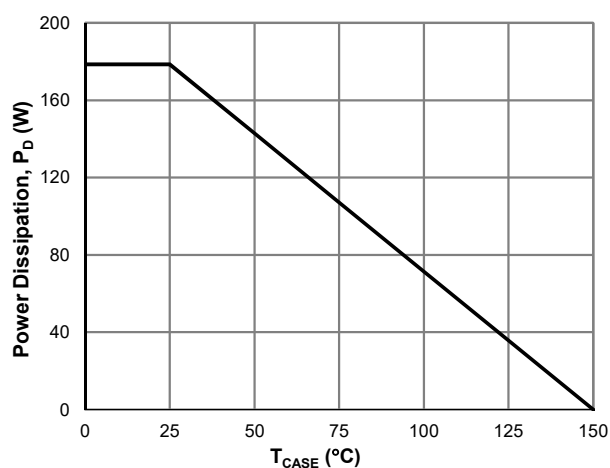


Figure 8: Power De-rating

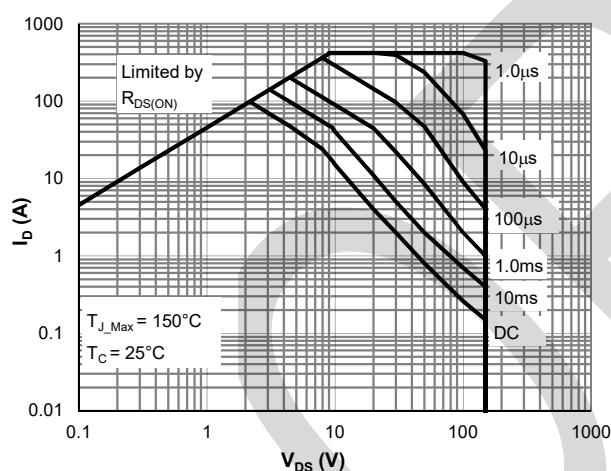


Figure 9: Maximum Safe Operating

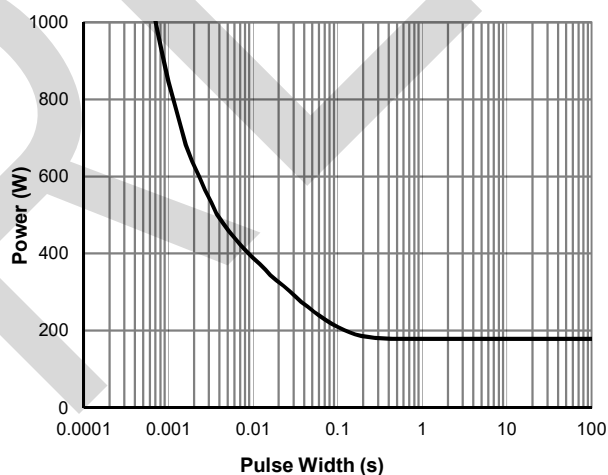


Figure 10: Single Pulse Power Rating, Junction-to-Case

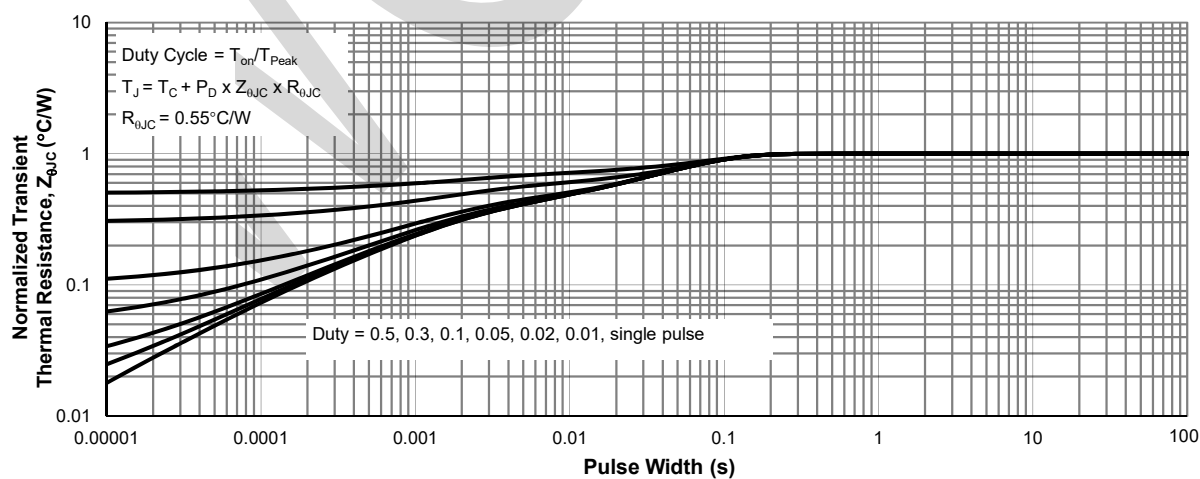
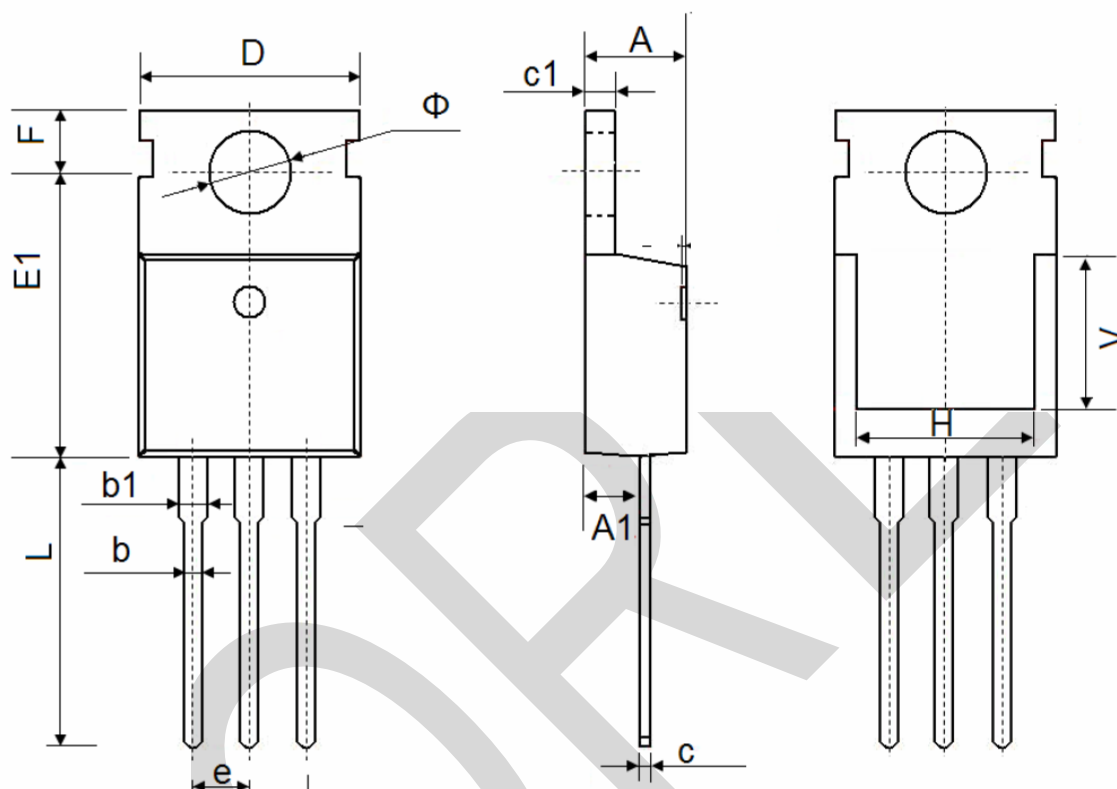


Figure 11: Normalized Maximum Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220AB



ITO-220AB mechanical data

UNIT		A	A1	b	b1	c	c1	D	E1	e	F	H	L	V	Φ
mm	min	4.2	2.1	0.6	1.1	0.25	1.1	9.8	12.5	2.54	2.5	7.8	12.8	6.9	3.3
	max	4.8	2.7	1.0	1.5	0.75	1.5	10.4	13.1	TYP	3.1	8.2	13.5	REF	3.9
mil	min	165.3	82.6	23.6	43.3	9.8	43.3	385.8	492.1	99.9	98.4	307.1	503.9	271.6	129.9
	max	199.1	106.3	39.4	59.1	29.6	59.1	409.5	515.8	TYP	122.1	322.9	531.5	REF	153.5