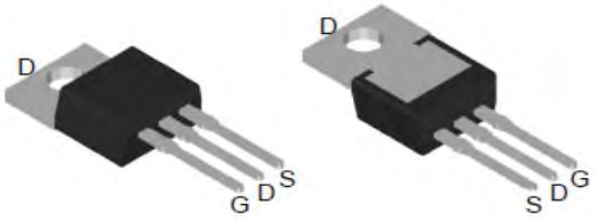
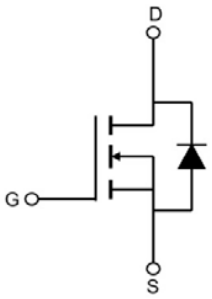
MTR7R5N06CT

10-JUN-2021

SGT N-channel Power MOSFET

TO-220AB
MTR7R5N06CT





V_{DS}	60	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	6.5	mΩ
I_D	80	A

Features

1、Low on – resistance
2、High power 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°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_D	Continuous drain current @VGS=10V	T_C =25°C	80	A
		T_C =100°C	50	A
I_{DM}	Pulse drain current tested	T_C =25°C	320	A
EAS	Avalanche energy, single pulsed		60	mJ
P_D	Maximum power dissipation	T_C =25°C	78	W
		T_C =100°C	31	W
T_{STG},T_J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.6	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	60	°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	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current (T_j =125℃)	V_{DS}=60V,V_{GS}=0V	--	--	100	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	1.0	1.7	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance ④	V_{GS}=10V, I_D=20A	--	6.5	7.5	mΩ
		V_{GS}=4.5V, I_D=20A	--	9.2	11	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=20A	--	44	--	S
V_{SD}	Diode forward voltage drop.	V_{GS}=0V, I_S=40A	--	0.9	1.3	V
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=30V,V_{GS}=0V, f=1MHz	--	1456	--	pF
C_{oss}	Output Capacitance		--	424	--	pF
C_{rss}	Reverse Transfer Capacitance		--	14	--	pF
R_g	Gate Resistance	V_{DS}=0V, Scan F mode	--	1.3	--	Ω
Q_g	Total Gate Charge	V_{DS}=30V,I_D=20A, V_{GS}=10V	--	26.9	--	nC
Q_{gs}	Gate-Source Charge		--	7.2	--	nC
Q_{gd}	Gate-Drain Charge		--	3.5	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DD}=30V, R_D=5Ω, R_G=10Ω, V_{GS}=10V	--	15	--	ns
Tr	Turn-on Rise Time		--	20	--	ns
Td(off)	Turn-Off Delay Time		--	37	--	ns
Tf	Turn-Off Fall Time		--	7	--	ns

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

② L=0.5mH,Rg=25Ω, starting T_J=25℃.

③ Pulse width ≤ 380μs; duty cycle≤ 2%.

Typical Characteristics

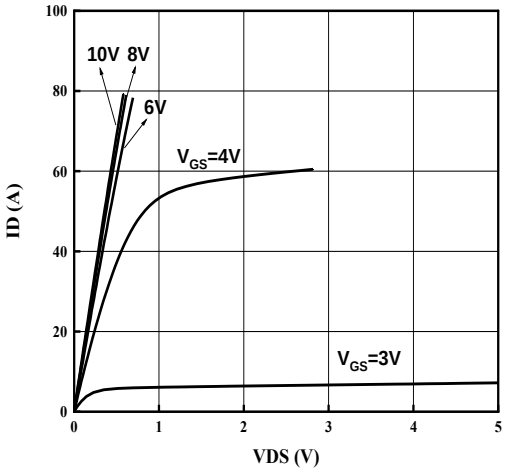


Fig1. Typical Output Characteristics

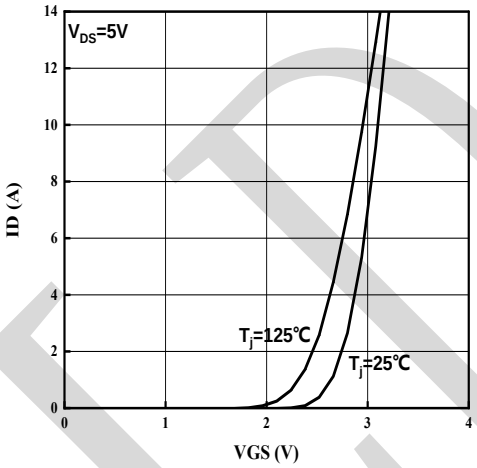


Fig2. Typical Transfer Characteristics

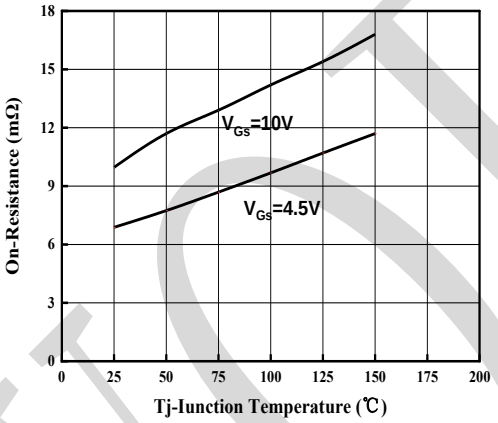


Fig3. Normalized On-Resistance Vs. Temperature

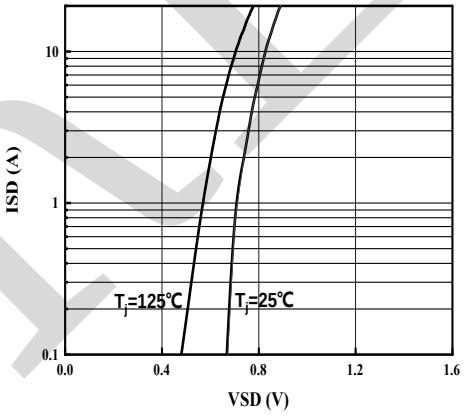


Fig4. Typical Source-Drain Diode Forward Voltage

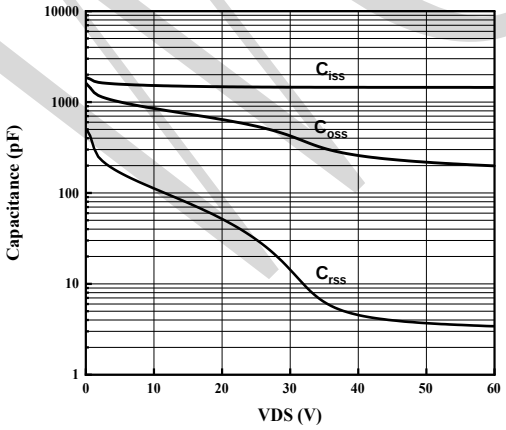


Fig5. Typical.Capacitance

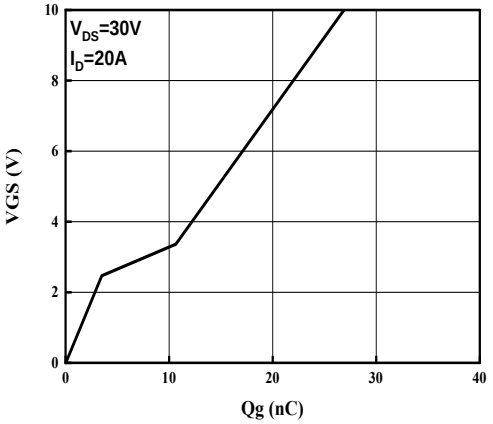


Fig6. Typical.Gate Charge

Typical Characteristics

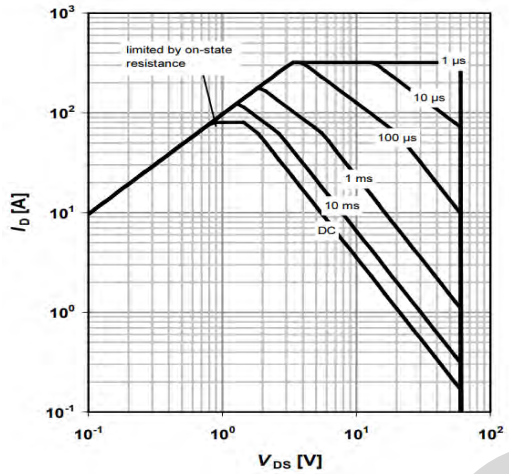


Fig7. Safe Operating Area

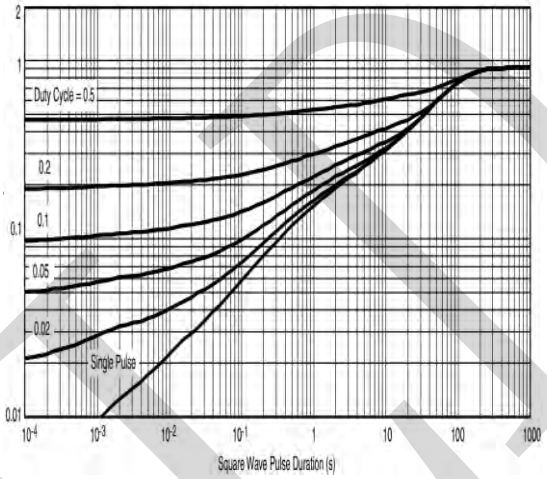


Fig8. Normalized transient thermal impedance

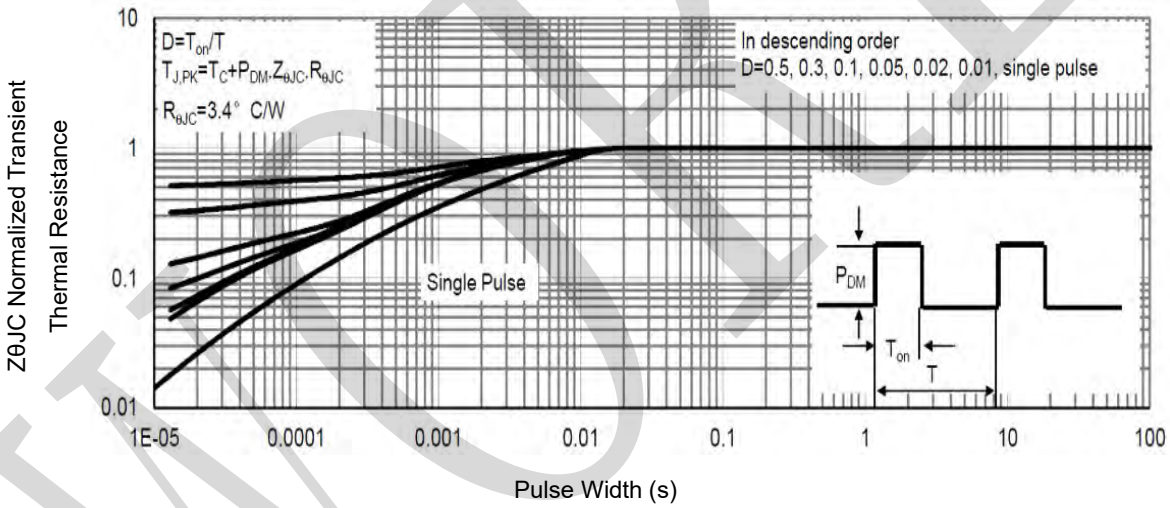
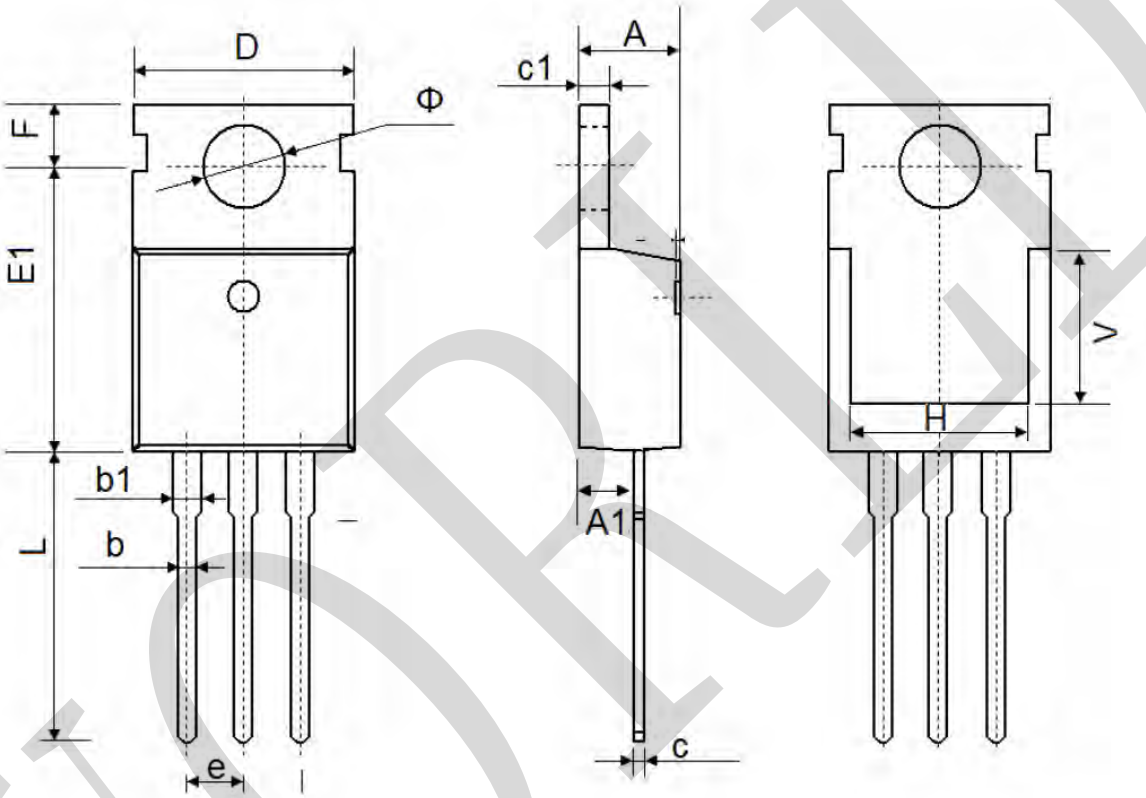


Fig9. Normalized Maximum Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220AB



TO-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	0.30	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	0.55	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	11.8	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	21.6	59.1	409.5	515.8	TYP	122.1	322.9	531.5	REF	153.5