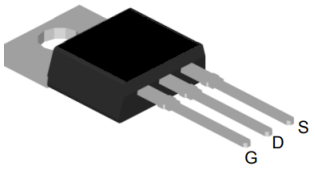
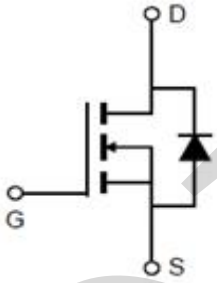
SGT N-channel Power MOSFET

MTR3R8N06CT
TO-220AB





V_{DS}	60	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	3.1	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	3.9	mΩ
I_{D}(Silicon Limit)	195	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
3、Synchronous Rectification for AC-DC Quick Charger

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	T_C =25°C(Silicon Limit)	195	A
		T_C =100°C	120	A
		T_C =25°C(Package Limit)	130	A
I_{DM}	Pulse drain current tested (1)	T_C =25°C	700	A
E_{AS}	Avalanche energy, single pulsed (2)		200	mJ
P_D	Maximum power dissipation	T_C =25°C T_C =100°C	208 83	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	0.6	°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
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	1.7	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance (3)	V_{GS}=10V, I_D=20A	--	3.1	3.8	mΩ
		V_{GS}=4.5V, I_D=20A	--	3.9	5	mΩ
g_{FS}	Forward Transconductance	VDS=5V, ID=20A	--	55	--	S
V_{SD}	Forward on voltage	I_S=20A,V_{GS}=0V	--	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	--	3590	--	pF
C_{oss}	Output Capacitance		--	1080	--	pF
C_{rss}	Reverse Transfer Capacitance		--	60	--	pF
R_g	Gate Resistance	VGS=0V, f=1MHz, VDS=0V	--	1.3	--	Ω
Q_g	Total Gate Charge	V_{DD}=30V, I_D=20A , V_{GS}=10V	--	68	--	nC
Q_{gs}	Gate-Source Charge		--	10.4	--	nC
Q_{gd}	Gate-Drain Charge		--	19.5	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DD}=30V, R_D=5Ω, R_G=10Ω, VGS=10V	--	14	--	ns
Tr	Turn-on Rise Time		--	9	--	ns
Td(off)	Turn-Off Delay Time		--	51	--	ns
Tf	Turn-Off Fall Time		--	13	--	ns

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

V_{SD}	Forward on voltage	I_S=20A,V_{GS}=0V	--	0.9	1.3	V
Trr	Reverse Recovery Time	IF=20A, di/dt=500A/μs	--	26	--	ns
Qrr	Reverse Recovery Charge	IF=20A, di/dt=500A/μs	--	125	--	nC

Notes:

1. Repetitive Rating:pulse width limited by maximum junction temperature.
2. L=0.5mH,Rg=25Ω, starting TJ=25℃.
3. Pulse width≤300us;duty cycle≤2%.

Typical Characteristics

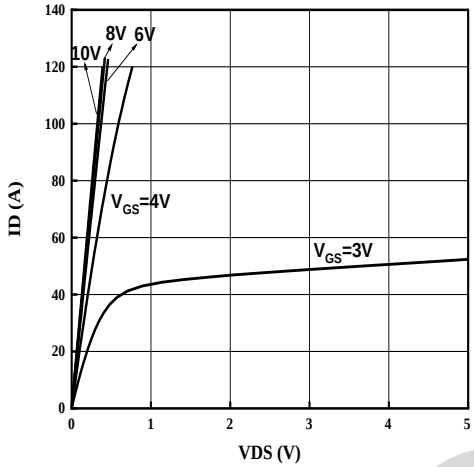


Fig1. Typical Output Characteristics

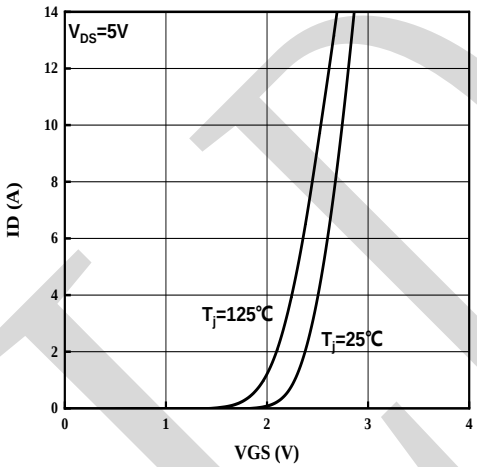


Fig2. Typical Transfer Characteristics

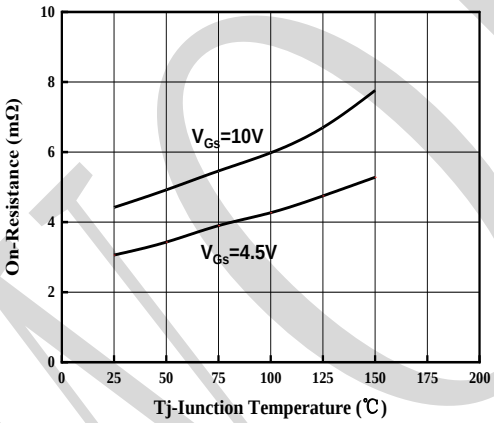


Fig3. On-Resistance Vs. Temperature

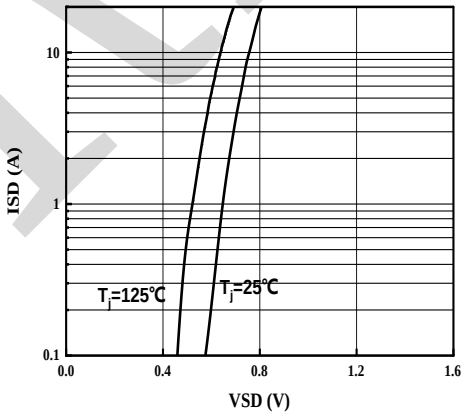


Fig4. Typical Source-Drain Diode Forward Voltage

Typical Characteristics

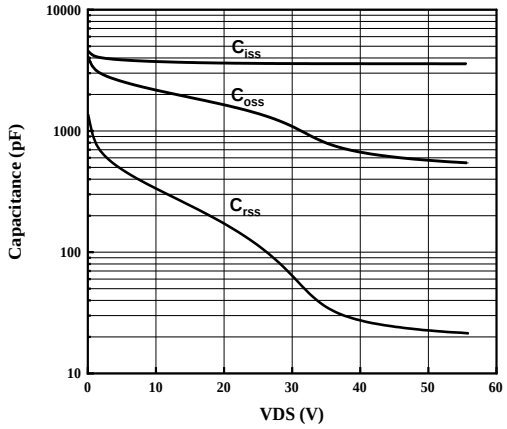


Fig5. Typical.Capacitance

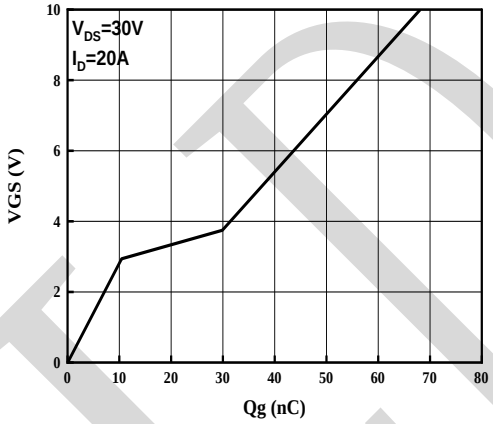


Fig6. Typical.Gate Charge

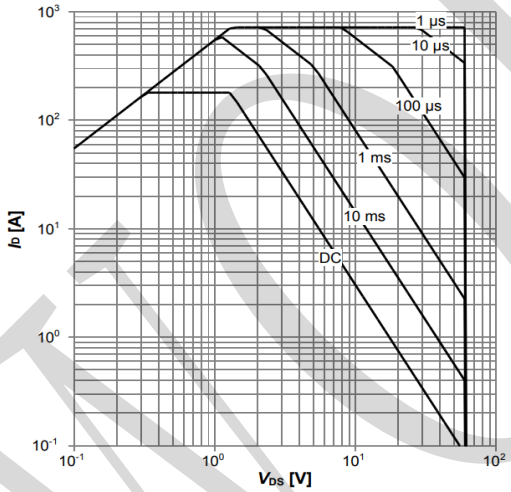


Fig7. Safe Operating Area

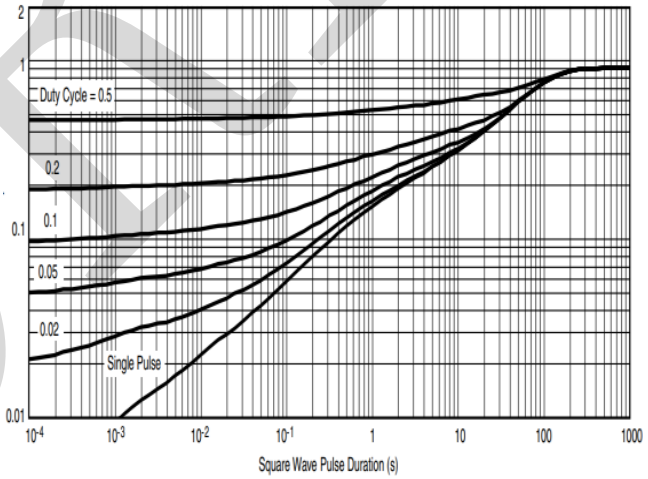
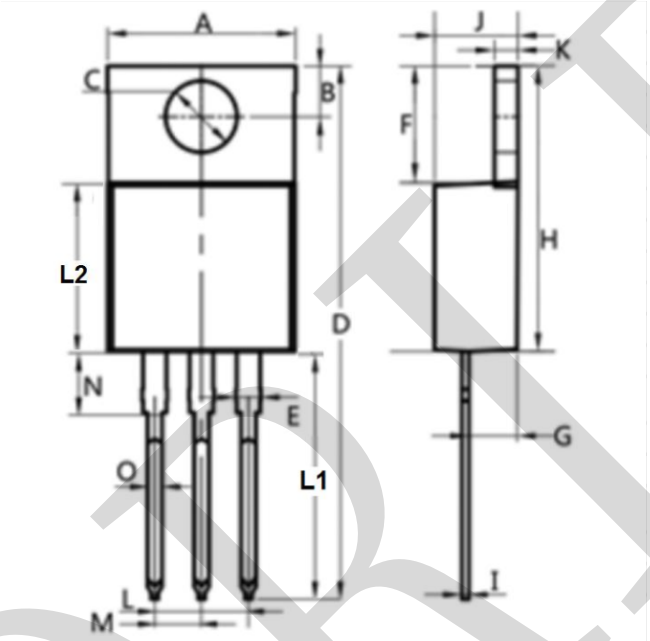


Fig8. Normalized transient thermal impedance

PACKAGE OUTLINE DIMENSIONS

TO-220AB



Dim.	Min.	Max.
A	10.15	10.35
B	2.50	2.95
C	3.70	3.90
D	28.5	29.5
E	1.20	1.40
F	6.20	6.55
G	2.4	2.6
H	15.0	16.0
I	0.35	0.42
J	4.3	4.55
K	1.25	1.35
L	Typ5.08	
L1	13	14
L2	8.5	9.5
M	Typ2.54	
N	2.8	3.5
O	0.70	0.90
All Dimensions in millimeter		