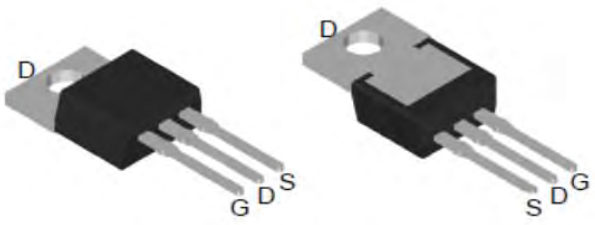
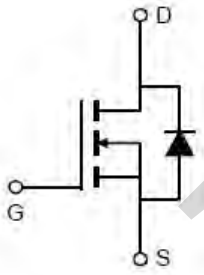
MTR007N15CT

10-JUN-2019

SGT N-channel Power MOSFET

TO-220AB
MTR007N15CT





V_{DS}	150	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	5.8	mΩ
I_D	140	A

Features

1、Low on – resistance
2、Package TO-220AB
3、SGT N-channel Power MOSFET
4、Halogen free

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		150	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous drain current @VGS=10V	T_C=25°C	140	A
		T_C=100°C	98	A
I_{DM}	Pulse drain current tested	T_C=25°C	560	A
EAS	Avalanche energy, single pulsed		900	mJ
P_D	Maximum power dissipation	T_C=25°C	400	W
	Derating Factor		2.69	W/°C
T_{STG},T_J	Storage and Junction Temperature Range		-55 to 150	°C

Notes:
1.Repetitive Rating: Pulse width limited by maximum junction temperature
2.EAS condition:T_J=25℃,V_{DD}=40V,V_G =10V,R_G=25Ω

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.372	°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	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current (T_j =125℃)	V_{DS}=150V,V_{GS}=0V	--	--	10	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	2.5	--	4.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=40A	--	5.8	7.0	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz	--	10305	--	pF
C_{oss}	Output Capacitance		--	2273	--	pF
C_{rss}	Reverse Transfer Capacitance		--	466	--	pF
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=15A	20	--	--	S
Q_g (10V)	Total Gate Charge	V_{DS}=75V,I_D=70A, V_{GS}=10V	--	177	--	nC
Q_{gs}	Gate-Source Charge		--	62	--	nC
Q_{gd}	Gate-Drain Charge		--	58	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DD}=30V, I_D=40A, R_L=15Ω, V_{GS}=10V R_G=2.5Ω,	--	15	--	ns
Tr	Turn-on Rise Time		--	32.3	--	ns
Td(off)	Turn-Off Delay Time		--	24	--	ns
Tf	Turn-Off Fall Time		--	15	--	ns

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

I_{SD}	Source-drain Current(Body Diode)		--	140	--	A
I_{SDM}	Pulsed Source-Drain Current (Body Diode)		--	560	--	A
V_{SD}	Forward on voltage (Note1)	I_{SD}=40A, V_{GS}=0V	--	0.9	0.99	V
Trr	Reverse Recovery Time (Note1)	I_F=30A , di/dt=100A/μs	--	45	--	ns
Qrr	Reverse Recovery Charge (Note1)		--	80	--	nC
Ton	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Notes:

1.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1.5%, R_G=25Ω, Starting T_J=25℃

Typical Characteristics

Figure1. Output Characteristics

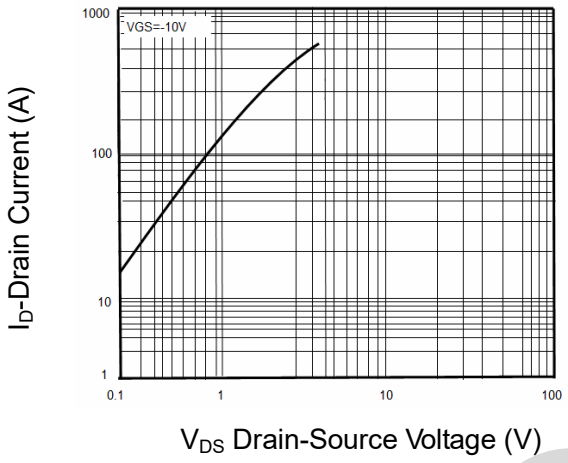


Figure2. Transfer Characteristics

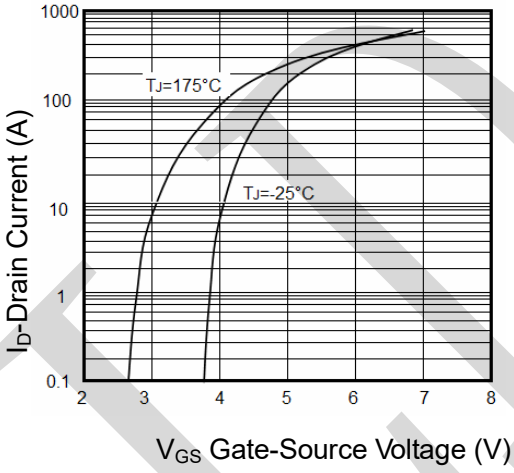


Figure3. BVDSS vs Junction Temperature

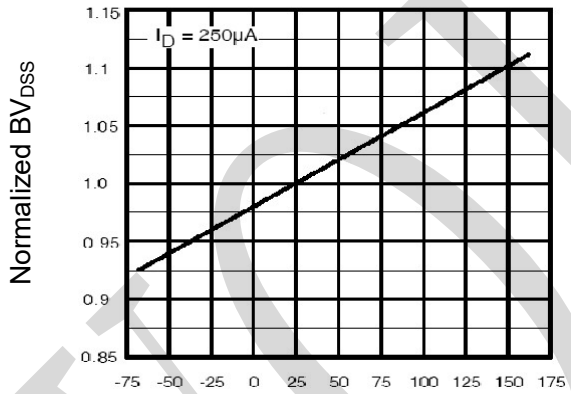


Figure4. ID vs Junction Temperature

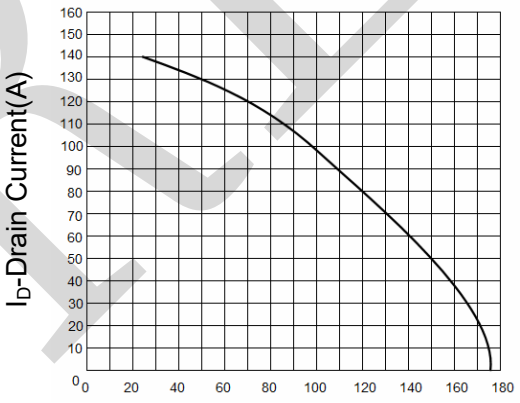


Figure5. VGS(th) vs Junction Temperature

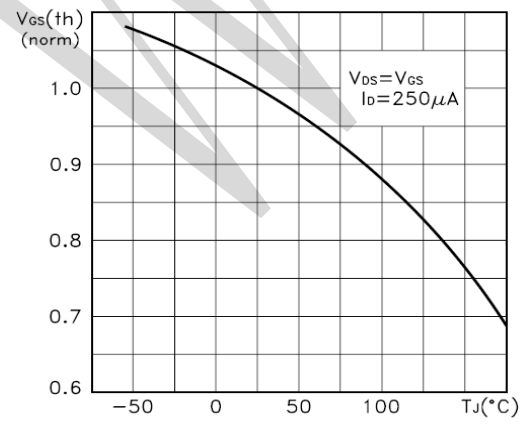
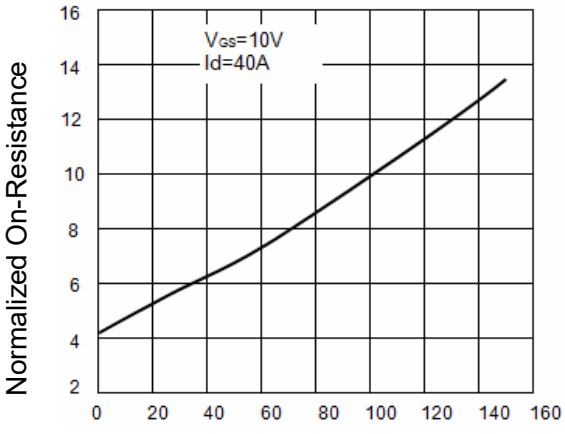


Figure6. Rdson Vs Junction Temperature



Typical Characteristics

Figure7. Gate Charge

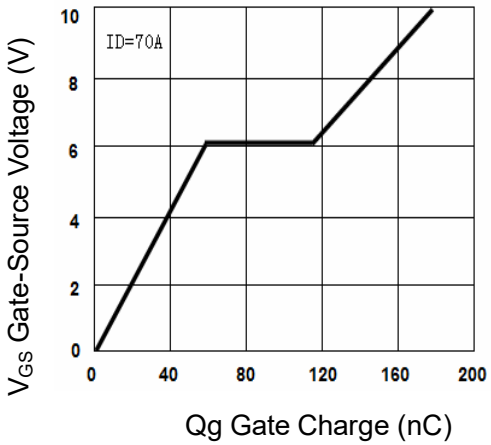


Figure8. Capacitance vs Vds

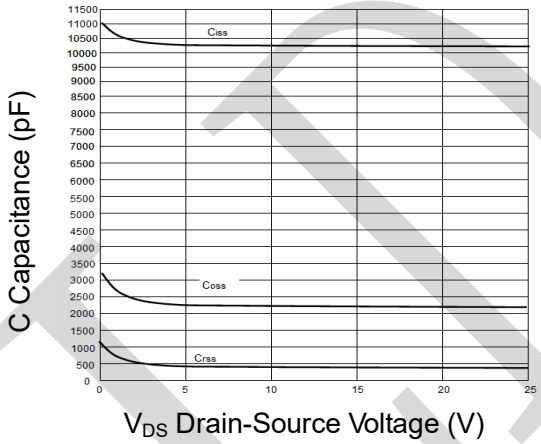


Figure9. Source- Drain Diode Forward

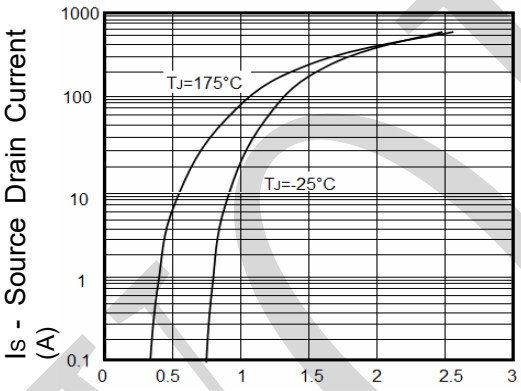


Figure10. Safe Operation Area

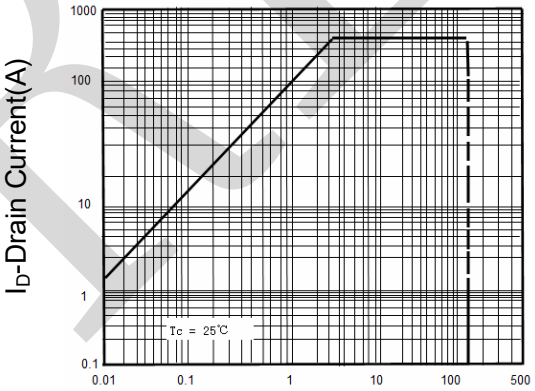
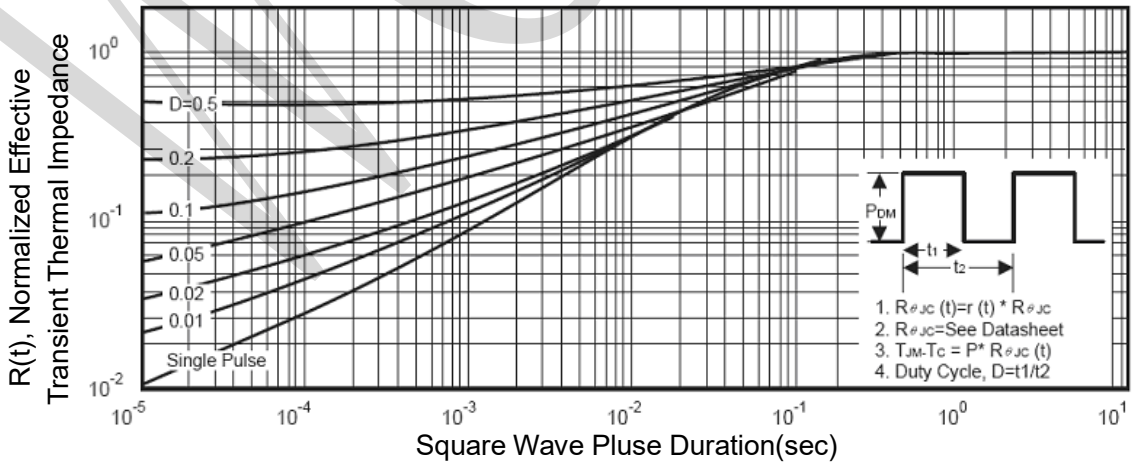
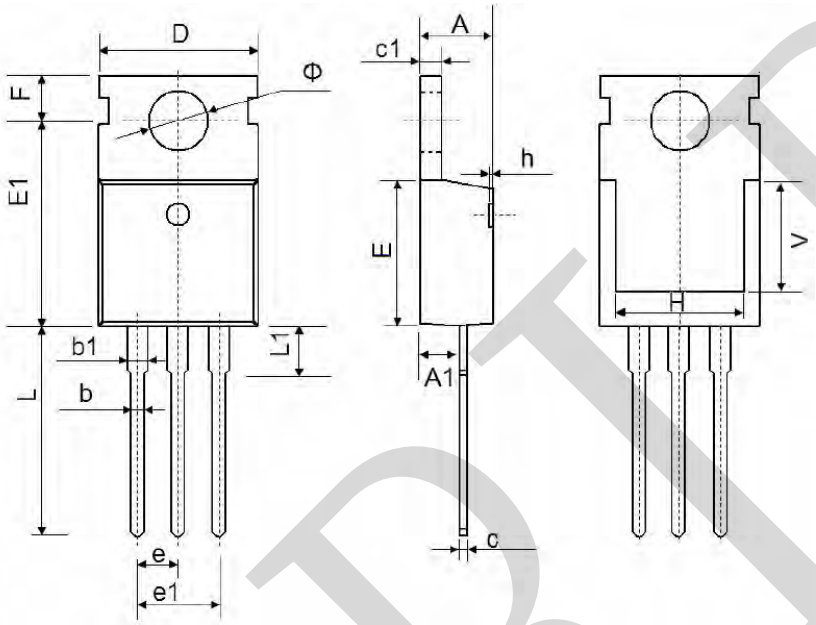


Figure11. Normalized Maximum Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

TO-220AB



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.9500	9.750	0.352	0.384
E1	12.650	12.950	0.498	0.510
e	2.540 Typ.		0.100 Typ.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	7.500 Ref.		0.295 Ref.	
Φ	3.400	3.800	0.134	0.150