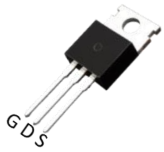
MTR4R9N08CT

10-JUN-2021

SGT N-channel Power MOSFET

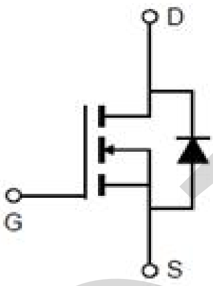
MTR4R9N08CT
TO-220CB



V_{DS}	80	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	3.9	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°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		80	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous drain current @VGS=10V	T_C =25°C(Silicon limit)	150	A
		T_C =25°C(Package limit)	120	A
		T_C =100°C(Silicon limit)	100	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	480	A
EAS	Avalanche energy, single pulsed ②		812	mJ
P_D	Maximum power dissipation	T_C =25°C	189	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	0.64	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	56	°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	80	--	--	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 ④	V_{GS}=10V, I_D=50A	--	3.9	4.9	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=40V,V_{GS}=0V, f=1MHz	--	4996	--	pF
C_{oss}	Output Capacitance		--	812	--	pF
C_{rss}	Reverse Transfer Capacitance		--	145	--	pF
R_g	Gate Resistance	VGS=0V, f=1MHz, VDS=0V	--	1.7	--	Ω
Q_g (10V)	Total Gate Charge	V_{DS}=40V,I_D=50A , V_{GS}=10V	--	67	--	nC
Q_{gs}	Gate-Source Charge		--	20	--	nC
Q_{gd}	Gate-Drain Charge		--	18	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DS}=40V, VGS=10V, R_L=3.0Ω, Tj=25°C	--	26	--	ns
Tr	Turn-on Rise Time		--	52	--	ns
Td(off)	Turn-Off Delay Time		--	54	--	ns
Tf	Turn-Off Fall Time		--	28	--	ns

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

V_{SD}	Forward on voltage	I_{SD}=50A,V_{GS}=0V	--	0.85	1.2	V
Trr	Reverse Recovery Time	IF=30A, di/dt=500A/μs	--	67	--	ns
Qrr	Reverse Recovery Charge	IF=30A, di/dt=500A/μs	--	79	--	nC

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

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH, R_G = 25Ω, I_{AS} = 9A, V_{GS} =10V. Part not recommended for use above this value

③ The power dissipation P_{DSM} is based on $R_{θJA}$ and the maximum allowed junction temperature of 150°C.

④ Pulse width ≤ 380μs; duty cycle≤ 2%.

Typical Characteristics

Figure 1. Typ. Output Characteristics (Tj=25℃)

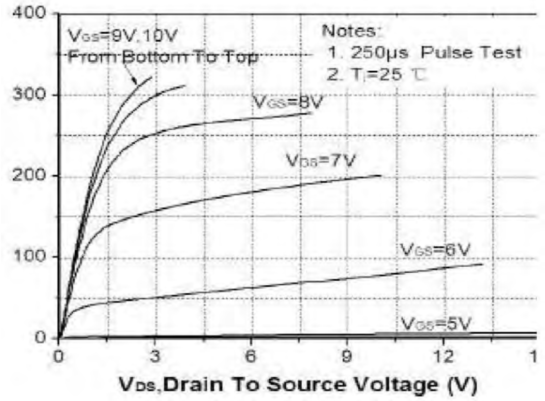


Figure 2. Transfer Characteristics (Junction Temperature)

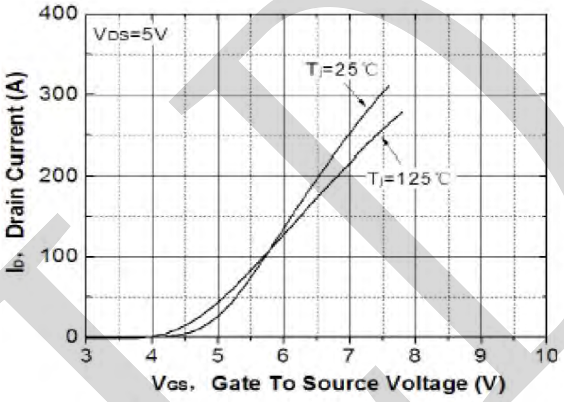


Figure 3. On-Resistance vs. Drain Current Junction and Gate Voltage Figure

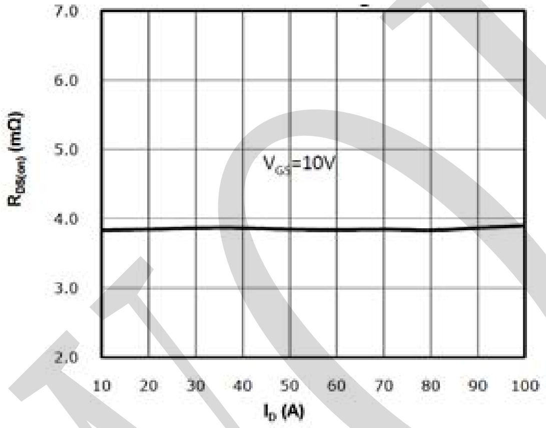


Figure 4. On-Resistance vs. Temperature

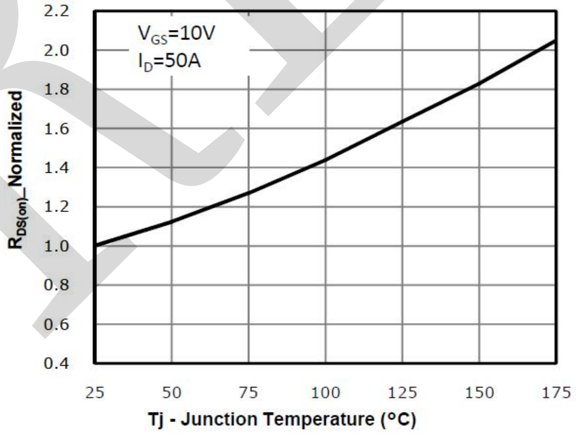


Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)

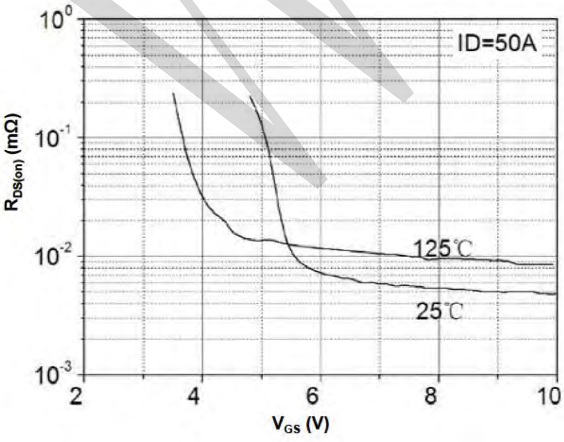
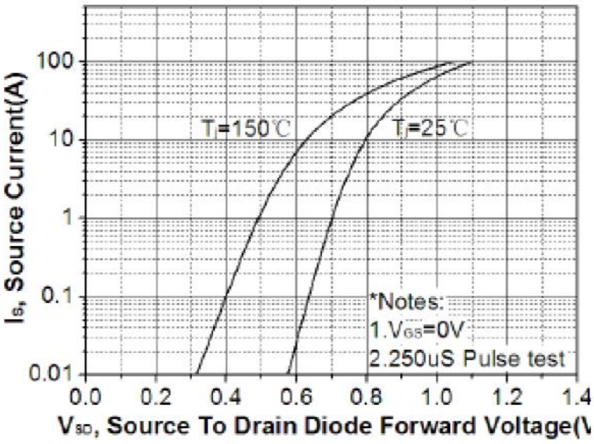


Figure 6. Body-Diode Characteristics (Junction Temperature)



Typical Characteristics

Figure 7. Gate-Charge Characteristics

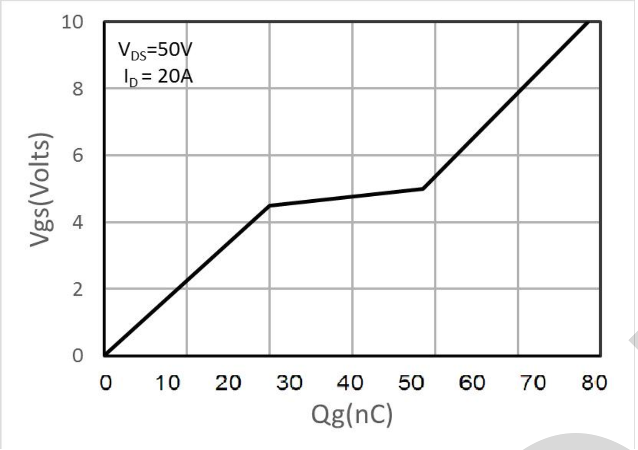


Figure 8. Drain Current Derating

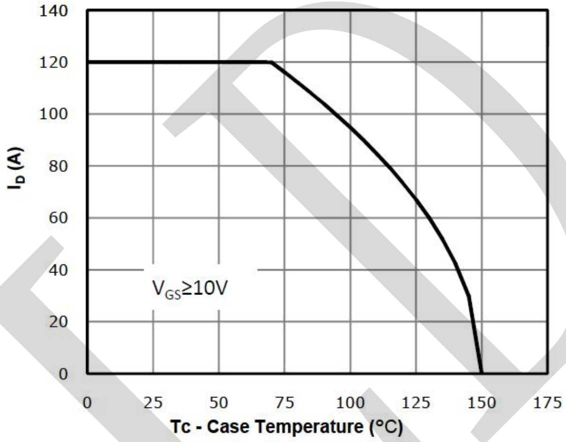


Figure 9. Capacitance Characteristics

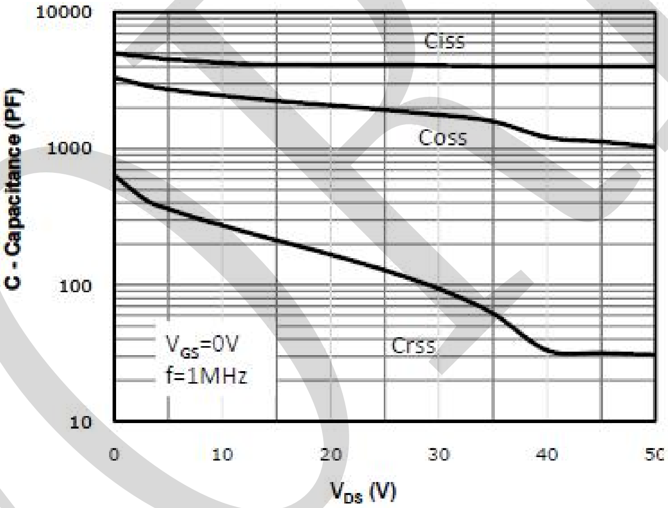
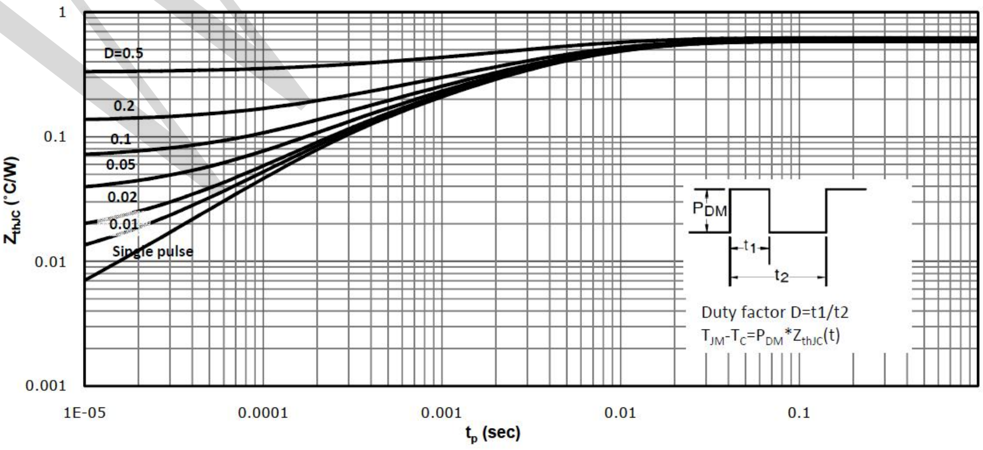
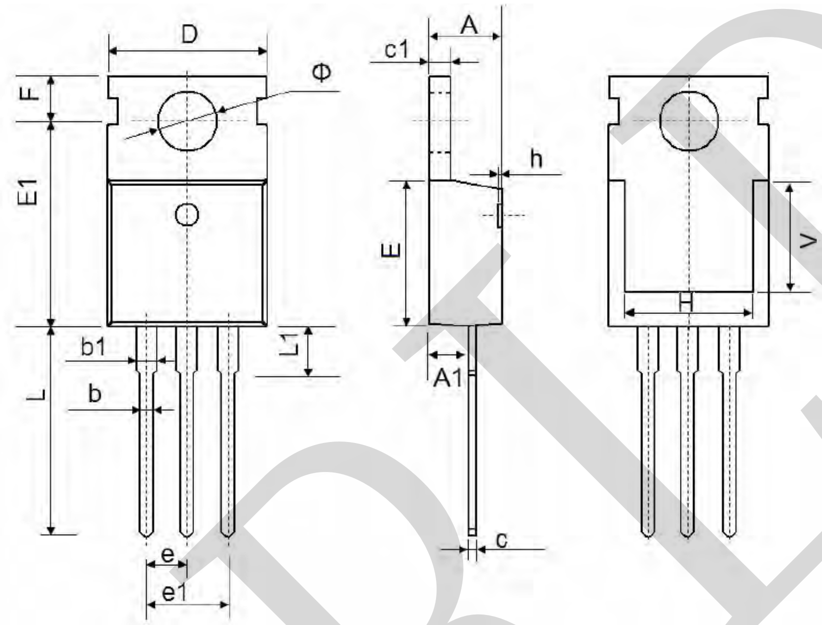


Figure 10. Normalized Maximum Transient Thermal Impedance (R_{thJC})



PACKAGE OUTLINE DIMENSIONS

TO-220CB



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