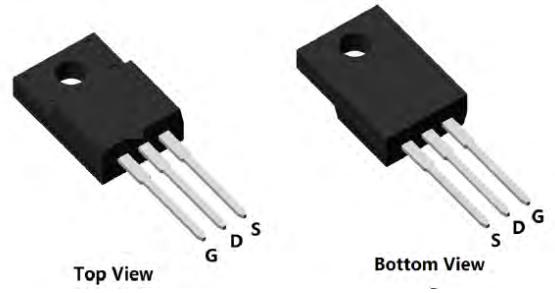
MTR009N10CTF

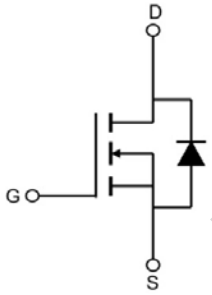
10-JUN-2021

SGT N-channel Power MOSFET

ITO-220AB
MTR009N10CTF



Top View　　Bottom View



V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	6.5	mΩ
I_D	73	A

Features

1、Low on – resistance
2、Package ITO-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		100	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous drain current @VGS=10V	T_C=25°C	73	A
		T_C=100°C	52	A
I_{DM}	Pulse drain current tested	T_C=25°C	190	A
EAS	Avalanche energy, single pulsed	L=0.1mH, T_C=25°C	22	mJ
P_D	Maximum power dissipation	T_C=25°C	125	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	1.2	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	°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	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,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	1.4	1.9	2.4	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	--	6.5	9.0	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=20A	--	60	--	S
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V , f=1MHz	--	2275	--	pF
C_{oss}	Output Capacitance		--	7.9	--	pF
C_{rss}	Reverse Transfer Capacitance		--	162	--	pF
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V , f=1MHz	--	1.5	--	Ω
Q_g (10V)	Total Gate Charge	V_{DS}=50V,I_D=14A , V_{GS}=10V	--	29	--	nC
Q_{gs}	Gate-Source Charge		--	5	--	nC
Q_{gd}	Gate-Drain Charge		--	5	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DD}=50V, RG=10Ω, V_{GS}=10V I_D=14A	--	8	--	ns
Tr	Turn-on Rise Time		--	3	--	ns
Td(off)	Turn-Off Delay Time		--	26	--	ns
Tf	Turn-Off Fall Time		--	4	--	ns

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

V_{SD}	Forward on voltage	VGS=0V,I_F=20A	--	0.9	1.2	V
Trr	Reverse Recovery Time	V_R=50V, I_F=12A, di/dt=100A/μs	--	33	--	ns
Qrr	Reverse Recovery Charge		--	157	--	nC

NOTE:

1.Computed continuous current assumes the condition of TJ_Max while the actual continuous current depends on the thermal & electro-mechanical application board design.

2.This single-pulse measurement was taken under TJ_Max = 150°C.

3.This single-pulse measurement was taken under the following condition [L = 100μH, VGS = 10V, VDS = 50V] while its value is limited by TJ_Max = 150°C.

4.The power dissipation PD is based on TJ_Max = 150°C.

5.This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

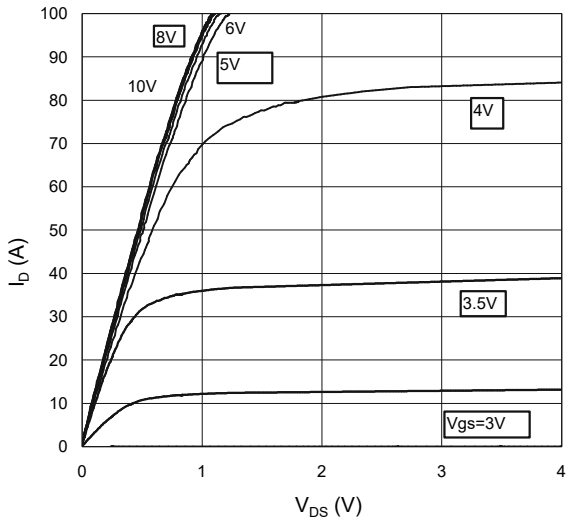


Fig 1. Typical Output Characteristics

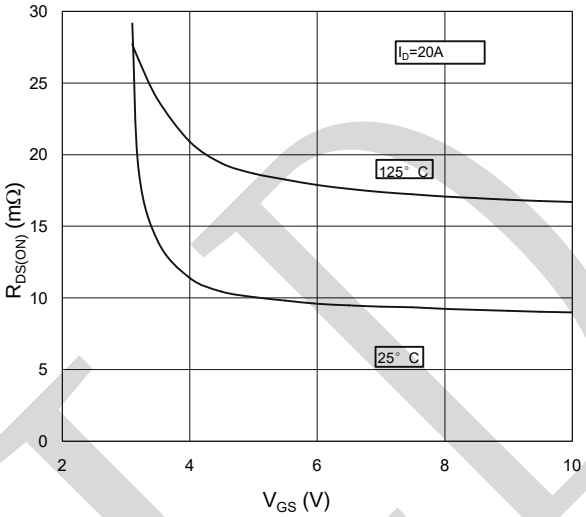


Figure 2. On-Resistance vs. Gate-Source Voltage

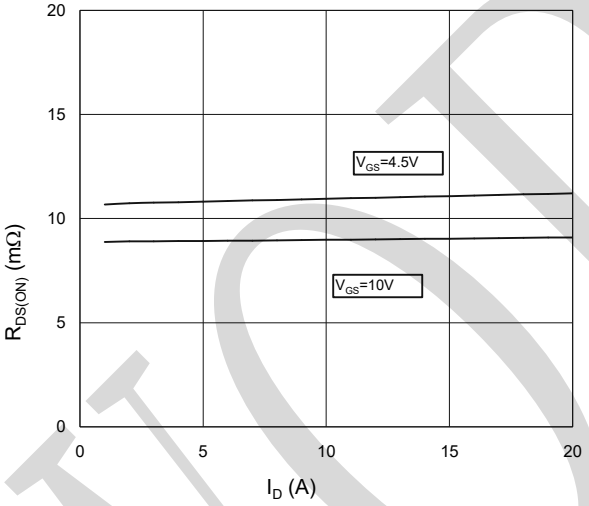


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

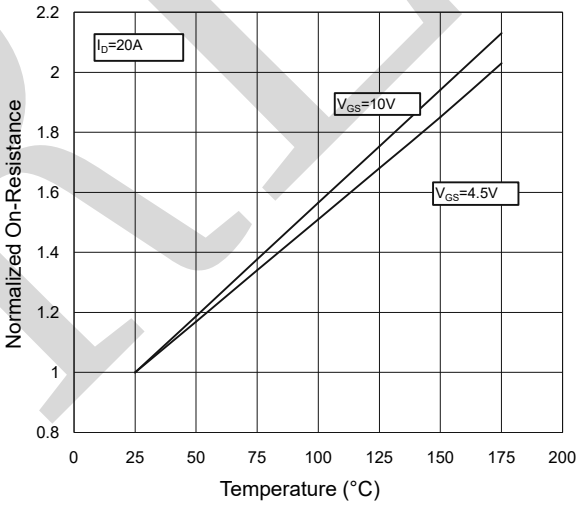


Figure 4. Normalized On-Resistance vs. Junction Temperature

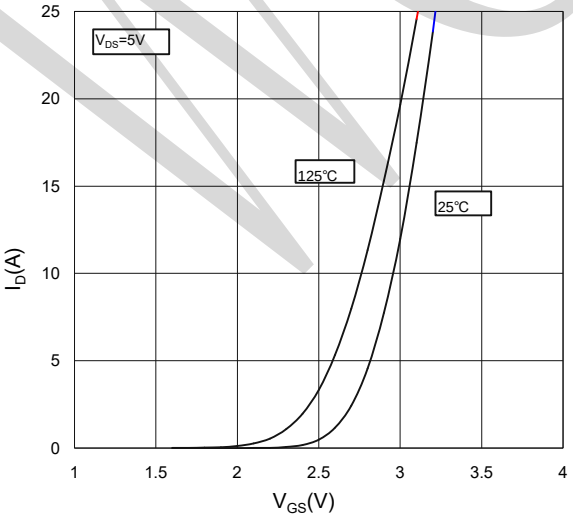


Figure 5. Typical Transfer Characteristics

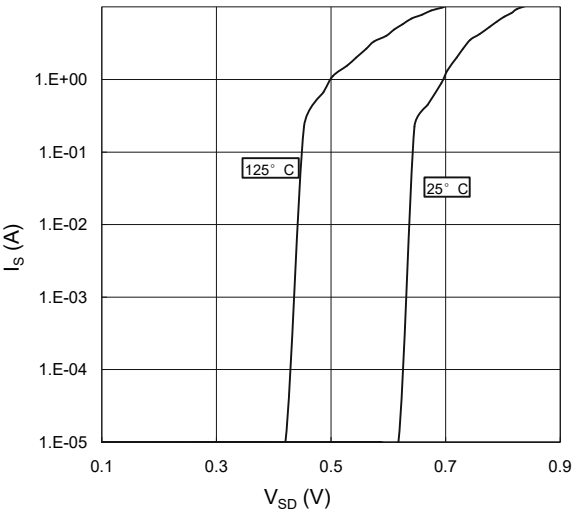


Figure 6. Typical Source-Drain Diode Forward Voltage

Typical Characteristics

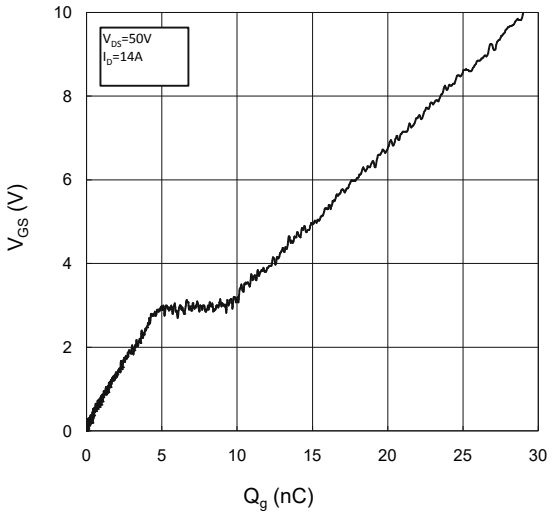


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

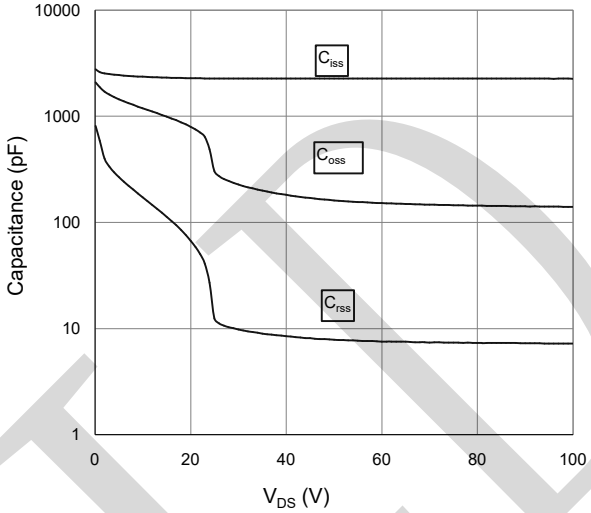


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

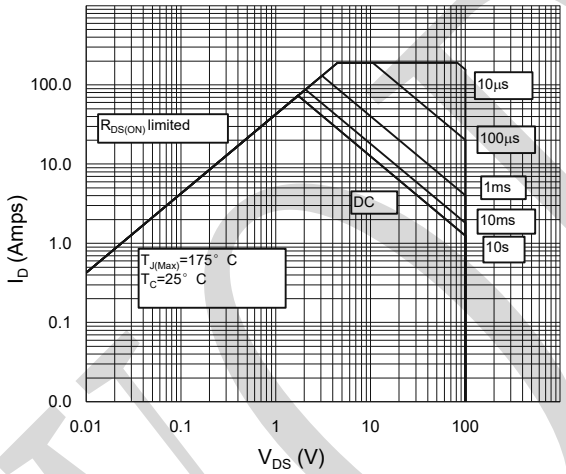


Figure 9. Maximum Safe Operating Area

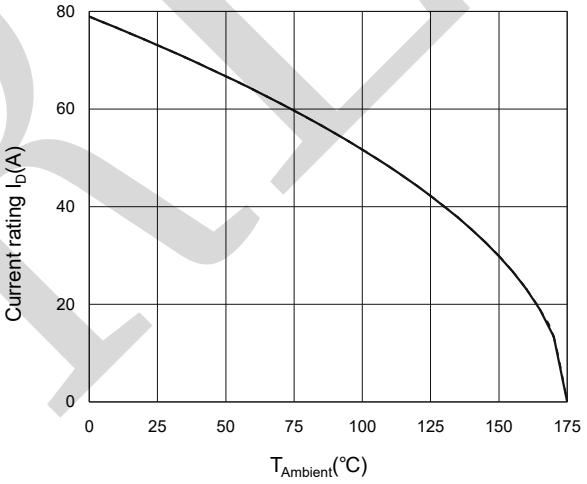


Figure 10. Maximun Drain Current vs. Case Temperature

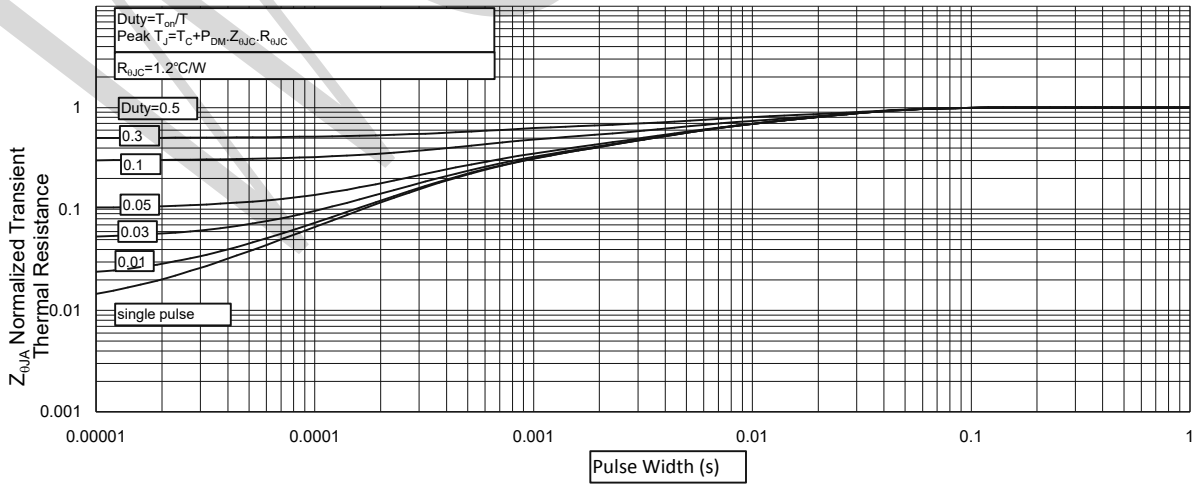


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

PACKAGE OUTLINE DIMENSIONS

Note:unit mm

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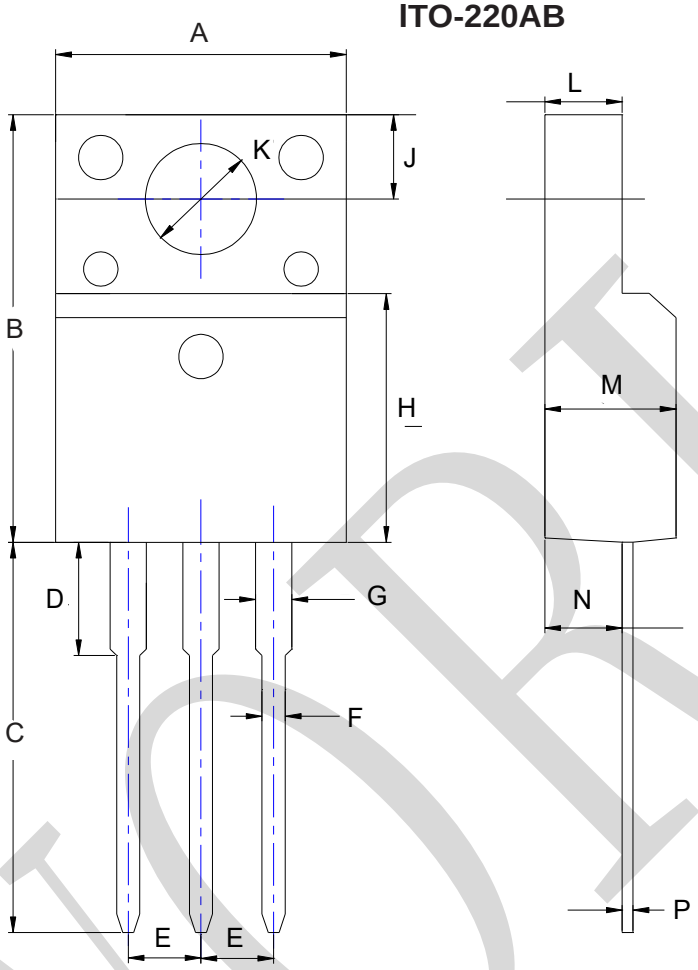

ITO-220AB mechanical data

UNIT		A	B	C	D	E	F	G	H	J	K	L	M	N	P
mm	min	9.7	15.5	12.6	2.7	2.3	0.50	1.1	8.9	3.1	3.0	2.3	4.5	2.6	0.4
	max	10.3	16.2	13.6	3.2	2.8	0.85	1.5	9.4	3.6	3.3	2.8	4.9	3.0	0.6
mil	min	381.8	610.2	496.1	106.3	90.5	19.6	43.3	350.4	23.62	122.0	90.5	177.1	102.4	15.7
	max	405.5	637.8	535.5	126.0	110.2	33.5	59.1	370.1	7.87	129.9	110.2	192.9	118.1	23.7