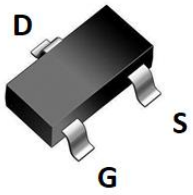
MTR135N10S23

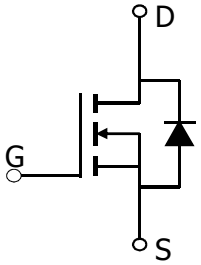
10-JUN-2021

SGT N-channel Power MOSFET

MTR135N10S23

SOT23





Schematic Diagram

V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	105	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	135	mΩ
I_D	3	A

Features

1、Low on – resistance

2、N Channel SOT23 Package

3、SGT N-channel Power MOSFET

4、Halogen free

Applications

1、Power Managerment in Telecom, Industrial Automation, CE

2、Current Switching in DC/DC & AC/DC (SR) Sub-systems

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	T_C =25°C	3.0	A
		T_C =70°C	2.0	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	17	A
P_D	Maximum power dissipation	T_C =25°C	0.87	W
		T_C =70°C	0.56	W
E_{AS}	Single pulse avalanche energy		0.80	mJ
T_{STG},T_J	Storage and Junction Temperature Range		-50 to ＋150	°C

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient(t ≤10s)	144	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @Tj=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}=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	1.2	1.9	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance ②	V_{GS}=10V, I_D=2A	--	105	135	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance ②	V_{GS}=4.5V, I_D=1A	--	135	174	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=2A	--	6.8	--	S

Dynamic Electrical Characteristics@Tj = 25°C (unless otherwise stated)

C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V , f=1MHz	--	103	--	pF
C_{oss}	Output Capacitance		--	47	--	pF
C_{rss}	Reverse Transfer Capacitance		--	4.9	--	pF
Q_g	Total Gate Charge	V_{DS}=50V, I_D=2A , V_{GS}=10V	--	2.3	--	nC
Q_{gs}	Gate-Source Charge		--	0.3	--	nC
Q_{gd}	Gate-Drain Charge		--	0.7	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	Tj=25°C, V_{DS}=50V, V_{GS}=10V, R_L=25Ω, R_{GEN}=6Ω	--	2.1	--	ns
Tr	Turn-on Rise Time		--	3.3	--	ns
Td(off)	Turn-Off Delay Time		--	7.5	--	ns
Tf	Turn-Off Fall Time		--	3.2	--	ns

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

V_{SD}	Forward on voltage ②	I_S=1A,V_{GS}=0V	--	--	1.0	V
I_{SD}	Source drain current(Body Diode)	T_A=25°C	--	--	0.7	A
t_{rr}	Reverse Recovery Time	I_F=2A,di/dt=100A/μs	--	21	--	nS
Qrr	Reverse Recovery Charge		--	8.0	--	nC

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under T_{J_Max} = 150°C.
3. This single-pulse measurement was taken under the following condition [L = 100μH, V_{GS} = 10V, V_{DS} = 50V] while its value is limited by T_{J_Max} = 150°C.
4. The power dissipation P_D is based on T_{J_Max} = 150°C.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

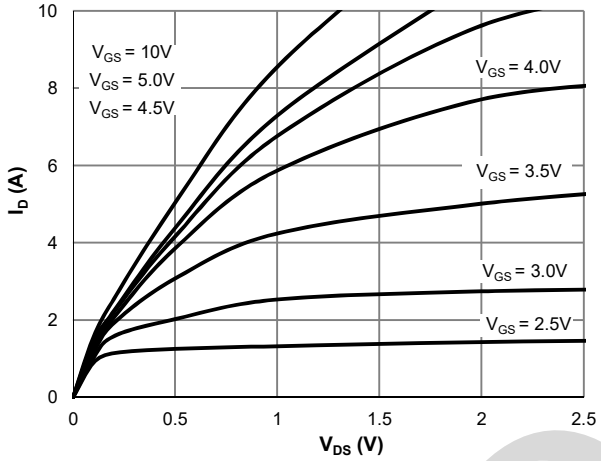


Figure 1: Saturation Characteristics

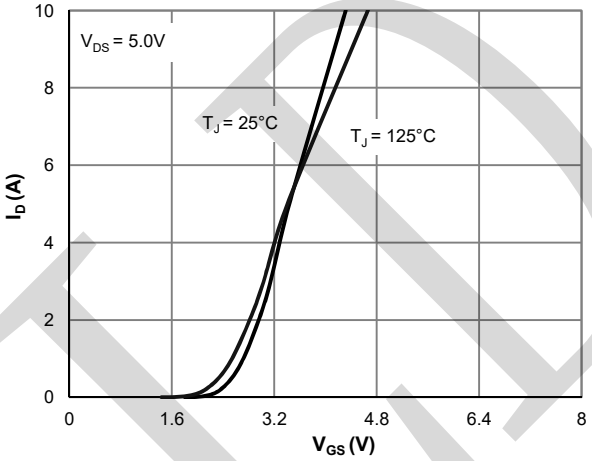


Figure 2: Transfer Characteristics

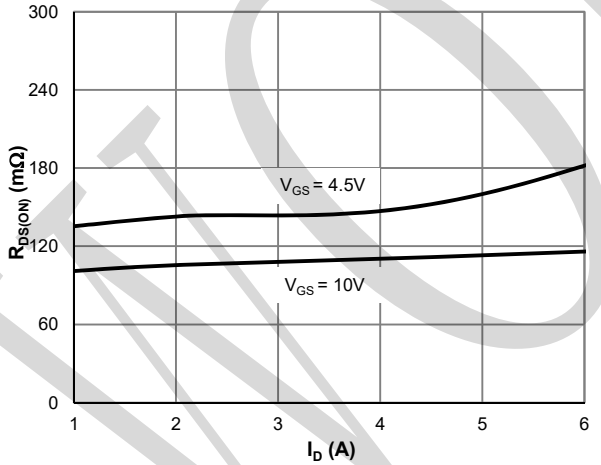


Figure 3: $R_{DS(ON)}$ vs. Drain Current

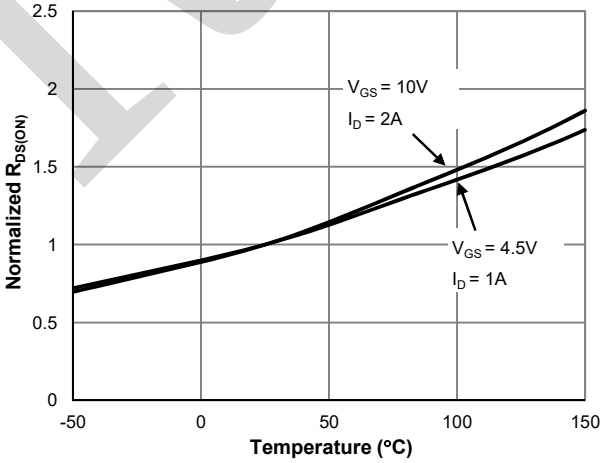


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

Typical Characteristics

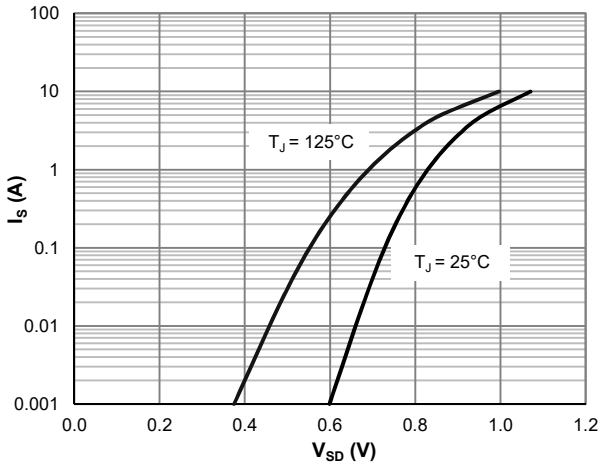


Figure 5: Body-Diode Characteristics

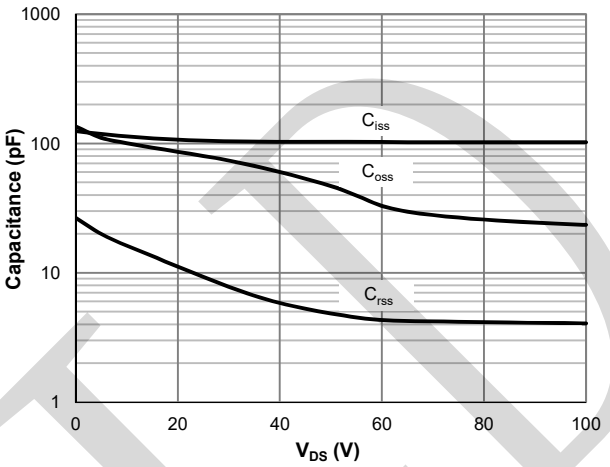


Figure 6: Capacitance Characteristics

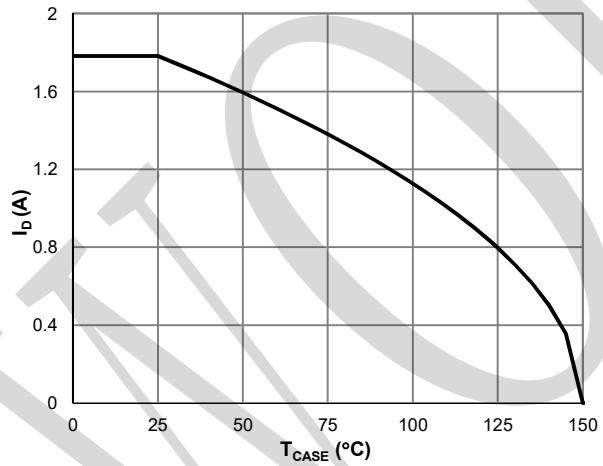


Figure 7: Current De-rating

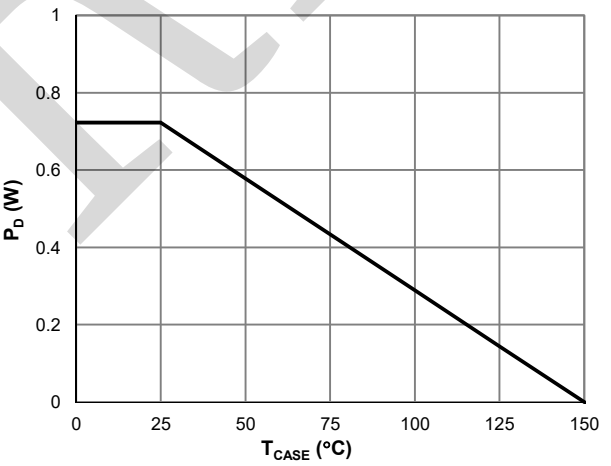


Figure 8: Power De-rating

Typical Characteristics

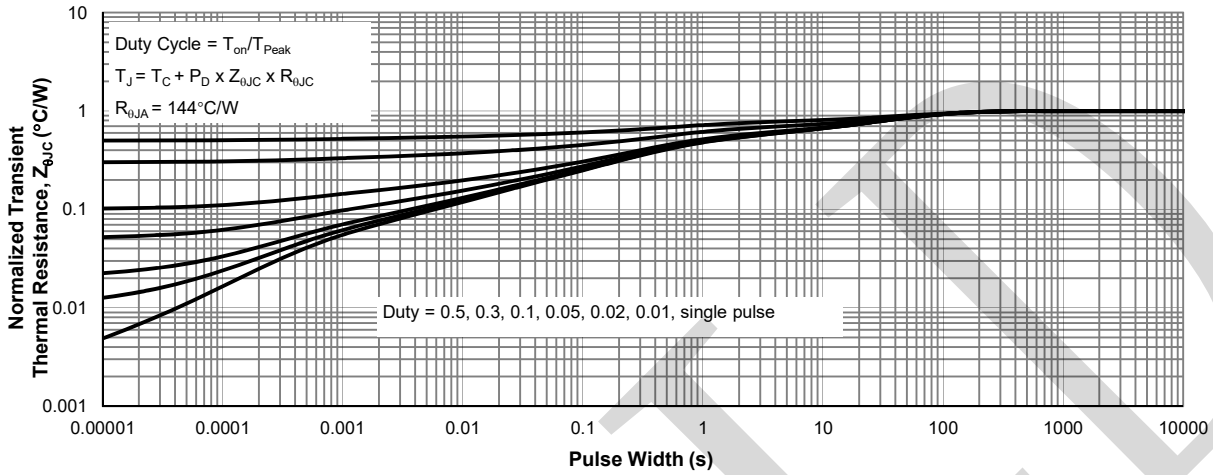
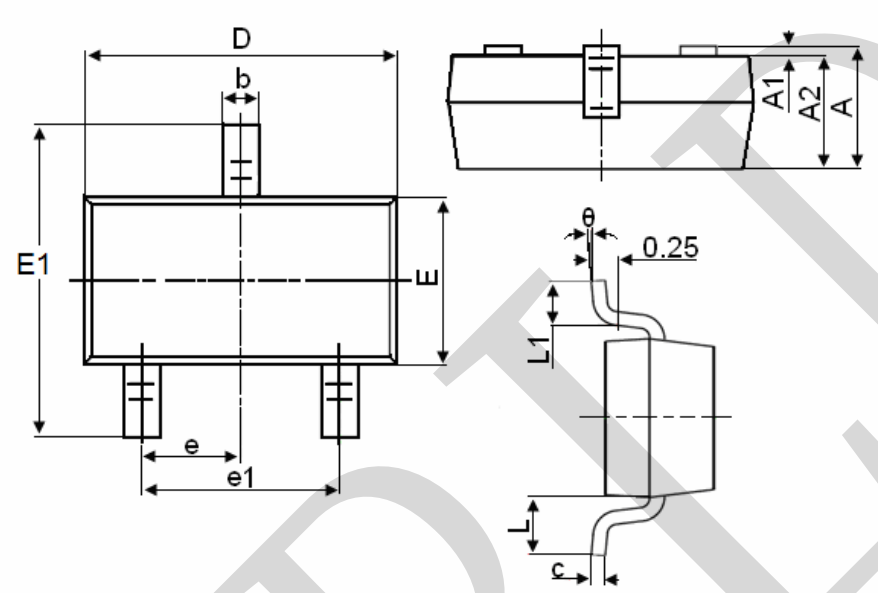


Figure 11: Normalized Maximum Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS

SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.