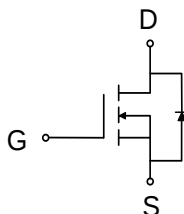
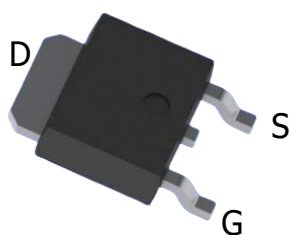


SGT N-Channel Power MOSFET

MTR16R5N10D

TO-252



Features

- Low on-resistance
- Low Crss, Fast switching
- Pb-free lead plating; RoHS compliant

Applications

- Synchronous Rectification for AC-DC Quick Charger
- DC/DC in Telecoms and Industrial
- Hard Switching and High Speed Circuit

Maximum ratings, at $T_A = 25^\circ\text{C}$, 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	41	A
		T _C =100°C	26	A
I _{DM}	Pulse drain current tested ①	T _C =25°C	164	A
EAS	Avalanche energy, single pulsed ②		37	mJ
PD	Maximum power dissipation	T _C =25°C	50	W
T _{STG} , T _J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	2.5	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
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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	--	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance ^③	V _{GS} =10V, I _D =20A	--	15	16.5	mΩ
		V _{GS} =4.5V, I _D =20A	--	19.5	22	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0 V , f=1MHz	--	954	--	pF
C _{oss}	Output Capacitance		--	221	--	pF
C _{rss}	Reverse Transfer Capacitance		--	5.5	--	pF
Q _g	Total Gate Charge	V _{DD} =50V, I _D =20A , V _{GS} =10V	--	23.5	--	nC
Q _{gs}	Gate-Source Charge		--	1.54	--	nC
Q _{gd}	Gate-Drain Charge		--	12.9	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =50V V _{GS} =10V R _D =5Ω R _G =10Ω	--	10	--	ns
Tr	Turn-on Rise Time		--	24	--	ns
Td(off)	Turn-Off Delay Time		--	16	--	ns
Tf	Turn-Off Fall Time		--	5	--	ns

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

VSD	Forward on voltage	I _S =20A, V _{GS} =0V	--	--	1.3	V
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NOTE: ① Repetitive Rating: Pulse width limited by maximum junction temperature.

② EAS Condition: L=0.5mH, R_g=25Ω, Start T_j=25°C

③ Pulse test: Width≤300us, Duty Cycle≤2%

Typical Characteristics

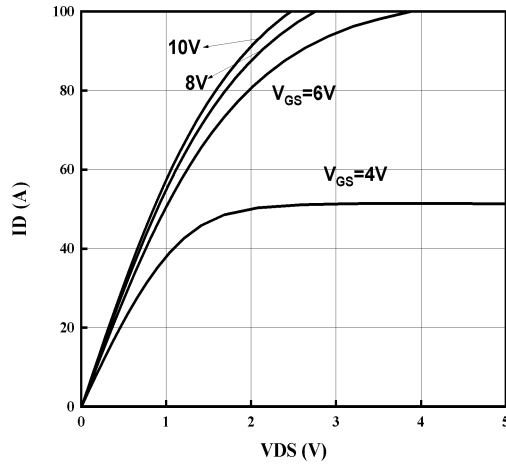


Fig1. Typical Output Characteristics

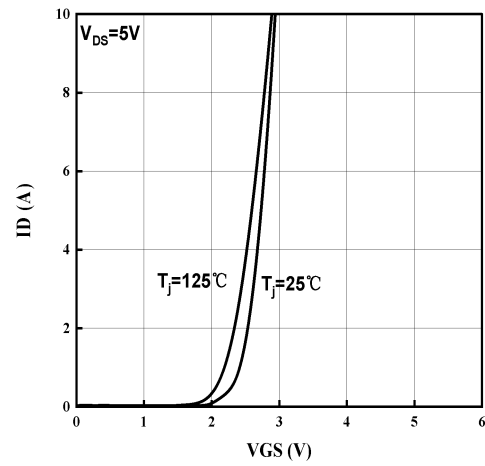


Fig2. Typical Transfer Characteristics

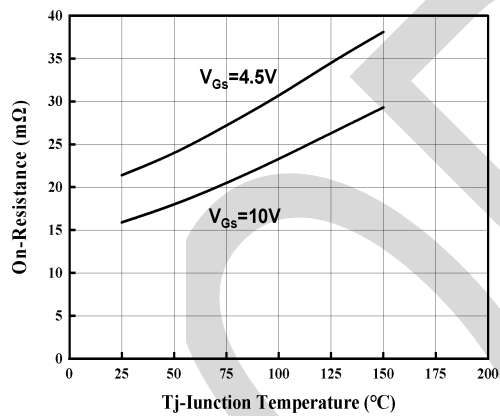


Fig3. On-Resistance Vs. Temperature

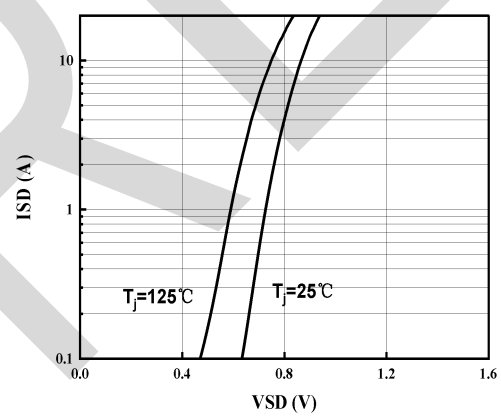


Fig4. Typical Source-Drain Diode Forward Voltage

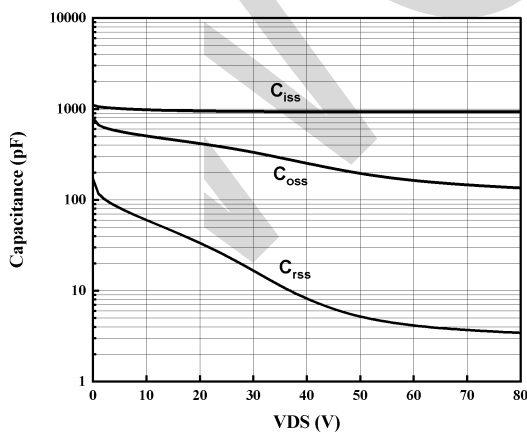


Fig5. Typical Capacitance

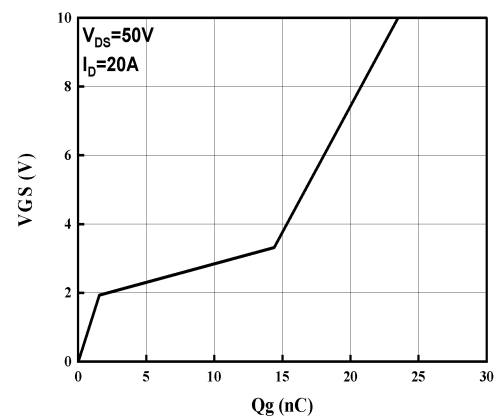


Fig6. Typical Gate Charge

Typical Characteristics

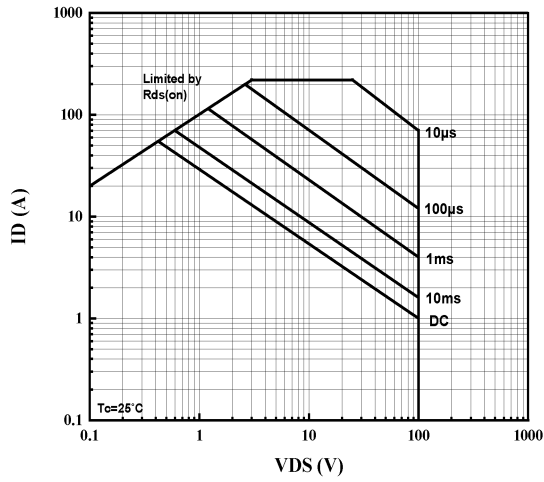


Fig7. Safe Operating Area

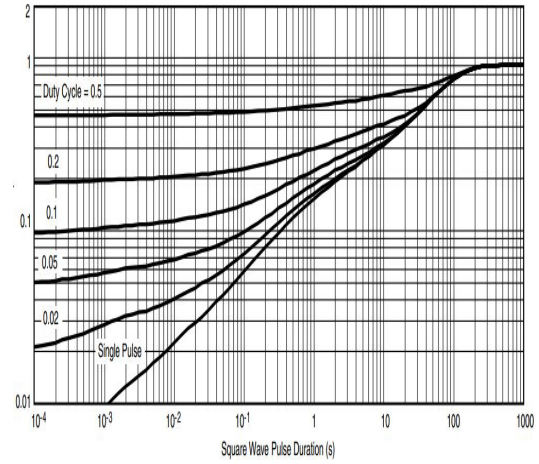
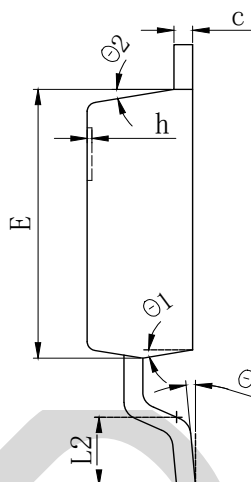
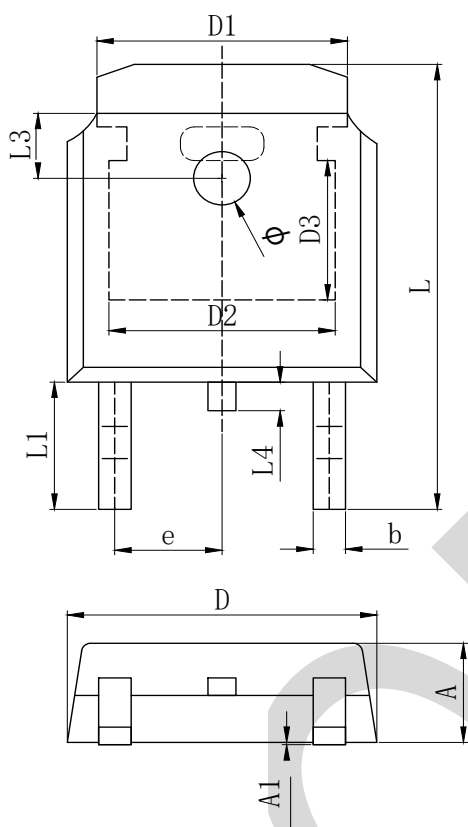


Fig8. Normalized transient thermal impedance

PACKAGE OUTLINE DIMENSIONS

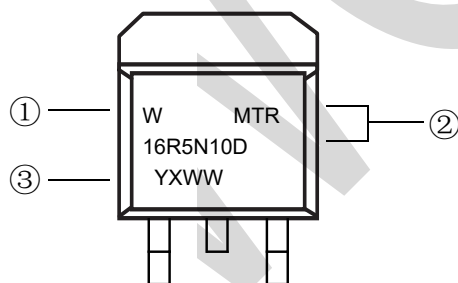
Note:unit mm

TO-252



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

Marking Information



①W : Company's trademark

②Product model : MTR16R5N10D

③PDC information:

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)