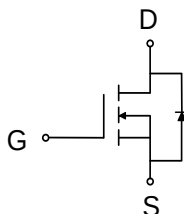
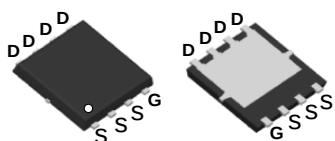


SGT N-Channel Power MOSFET

MTR16R5N10SD

PDFN5x6



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	50	A
		T _C =100°C	32	A
I _{DM}	Pulse drain current tested ①	T _C =25°C	200	A
EAS	Avalanche energy, single pulsed ②		37	mJ
P _D	Total power dissipation	T _C =25°C	76	W
		T _C =100°C	30	
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	1.6	°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	--	930	--	pF
C _{oss}	Output Capacitance		--	204	--	pF
C _{rss}	Reverse Transfer Capacitance		--	6	--	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

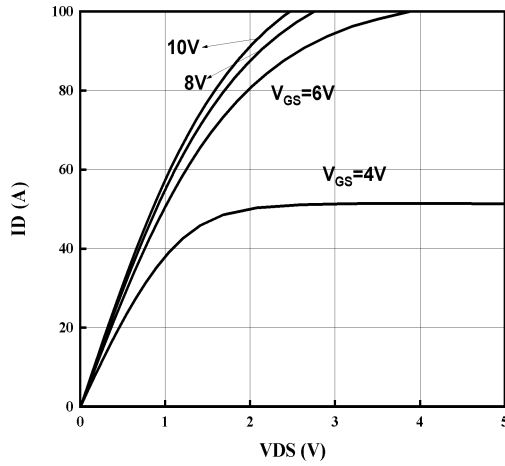


Fig1. Typical Output Characteristics

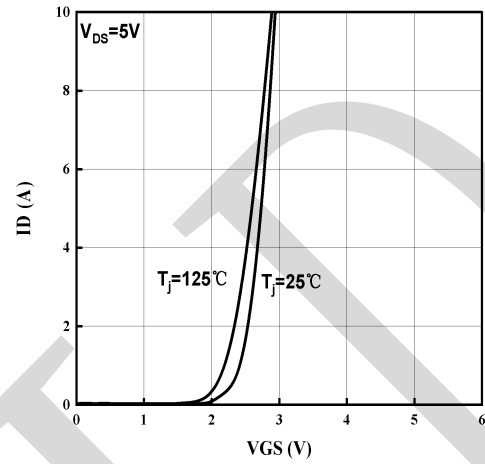


Fig2. Typical Transfer Characteristics

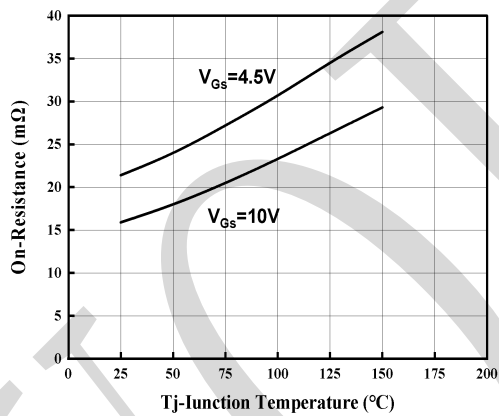


Fig3. On-Resistance Vs. Temperature

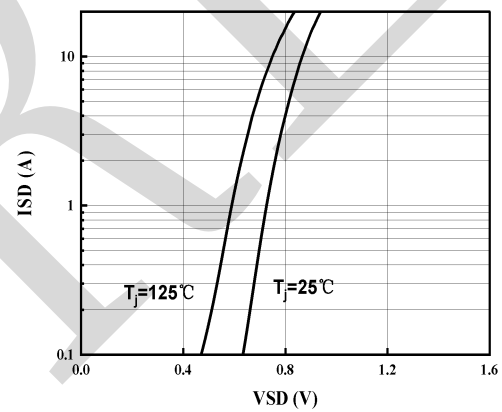


Fig4. Typical Source-Drain Diode Forward Voltage

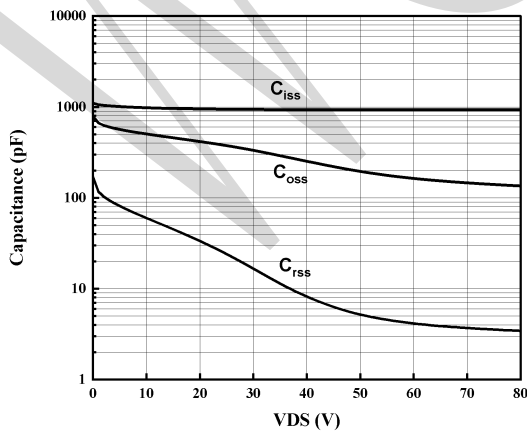


Fig5. Typical Capacitance

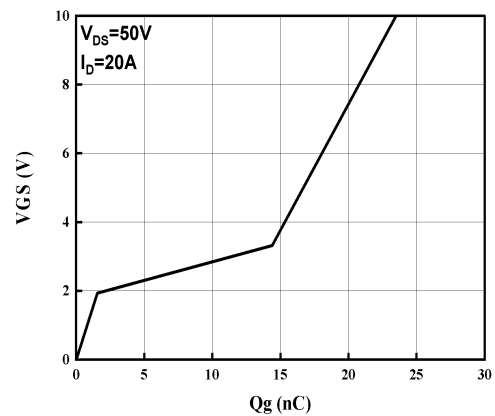


Fig6. Typical Gate Charge

Typical Characteristics

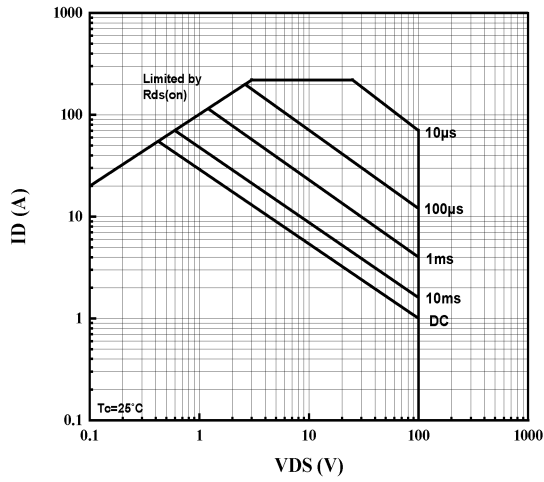


Fig7. Safe Operating Area

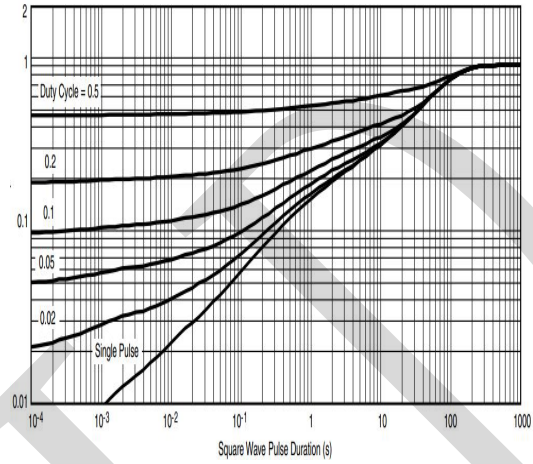
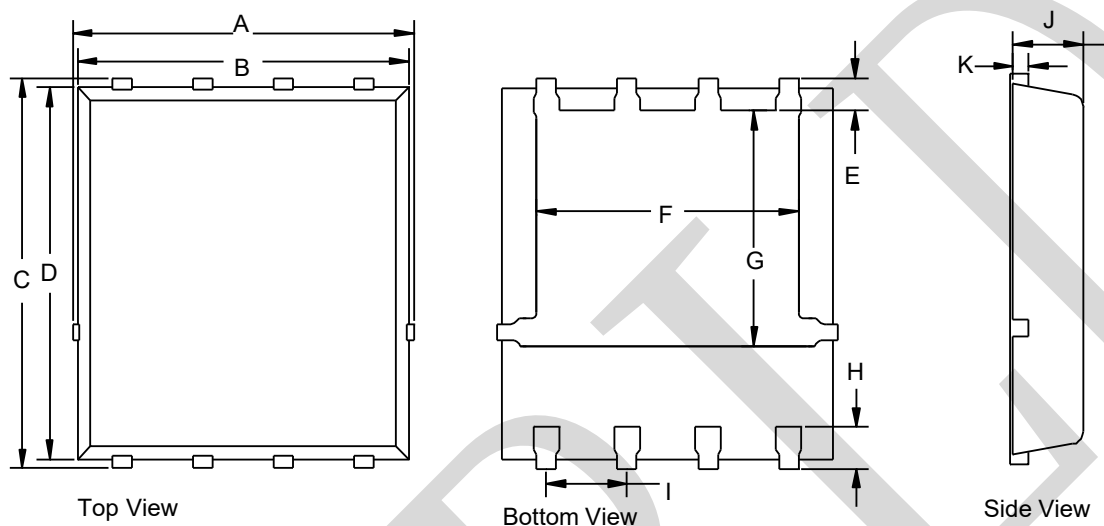


Fig8. Normalized transient thermal impedance

PACKAGE OUTLINE DIMENSIONS

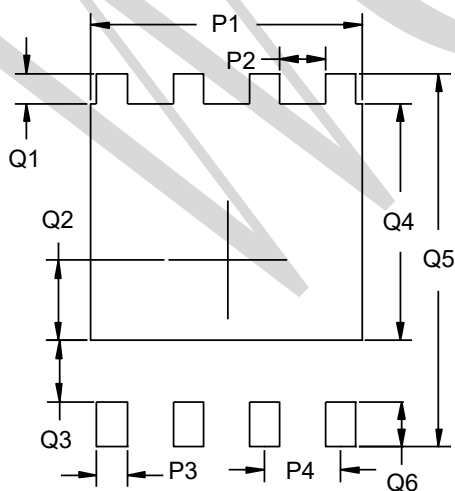
PDFN5X6



PDFN5x6 mechanical data

UNIT		A	B	C	D	E	F	G	H	I	J	K
mm	min	4.90	4.8	5.90	5.66	0.60	3.90	3.30	0.53	1.27	0.9	0.254
	max	5.55	5.4	6.35	6.06		4.32	3.92	0.76		1.2	
mil	min	192.9	188.9	232.3	222.8	23.6	153.5	129.9	20.8	50.0	35.4	10.0
	max	218.5	212.6	250.0	238.6		170.1	154.3	29.9		47.2	

PDFN5x6 Suggested Pad Layout

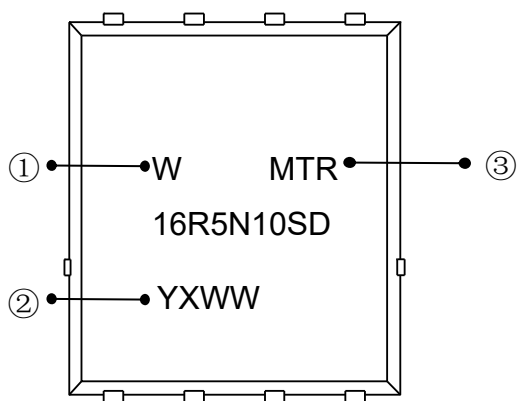


UNIT		P1	P2	P3	P4	Q1
mm	min	4.52	0.76	0.51	1.27	0.50
mil	min	177.9	29.9	20.07	50.0	20.0

UNIT		Q2	Q3	Q4	Q5	Q6
mm	min	1.34	1.02	3.97	6.25	0.76
mil	min	52.75	40.15	156.30	246.06	29.92

PACKAGE OUTLINE DIMENSIONS

Marking Information



- ① W : Company's trademark
- ② Product model : MTR16R5N10SD

③ PDC information :

Y X WW

WW: Week code(01 to 53)

X: Internal identification code

Y: Year code(ex:0=2020)