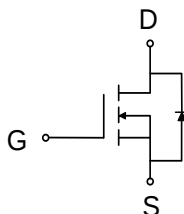
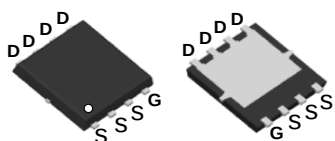


SGT N-Channel Power MOSFET

MTR8R5N10SD

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	60	A
		T _C =100°C	45	A
I _{DM}	Pulse drain current tested	T _C =25°C	240	A
E _{AS}	Avalanche energy, single pulsed		127	mJ
P _D	Total power dissipation	T _C =25°C	78	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	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	--	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	--	6.6	8.5	mΩ
		V _{GS} =4.5V, I _D =10A	--	8.5	11	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0 V , f=1MHz	--	1890	--	pF
C _{oss}	Output Capacitance		--	688	--	pF
C _{rss}	Reverse Transfer Capacitance		--	25	--	pF
Q _g	Total Gate Charge	V _{DD} =50V, I _D =20A , V _{GS} =10V	--	35	--	nC
Q _{gs}	Gate-Source Charge		--	7.8	--	nC
Q _{gd}	Gate-Drain Charge		--	8.7	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =50V V _{GS} =10V I _D =20A R _G =6Ω	--	14	--	ns
Tr	Turn-on Rise Time		--	15	--	ns
Td(off)	Turn-Off Delay Time		--	28	--	ns
Tf	Turn-Off Fall Time		--	16	--	ns

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

I _S	Continuous Source Current	V _G =V _D =0V, Force Current	--	--	60	A
I _{sm}	Pulsed Source Current		--	--	240	A
T _{rr}	Body Diode Reverse Recovery Time	I _F =10A, di/dt=100A/us	--	45	--	ns
Q _{rr}	Body Diode Reverse Recovery Charge		--	85	--	nC
V _{SD}	Forward on voltage	I _S =1A, V _{GS} =0V	--	--	1.0	V

Typical Characteristics

Fig1 Output Characteristics

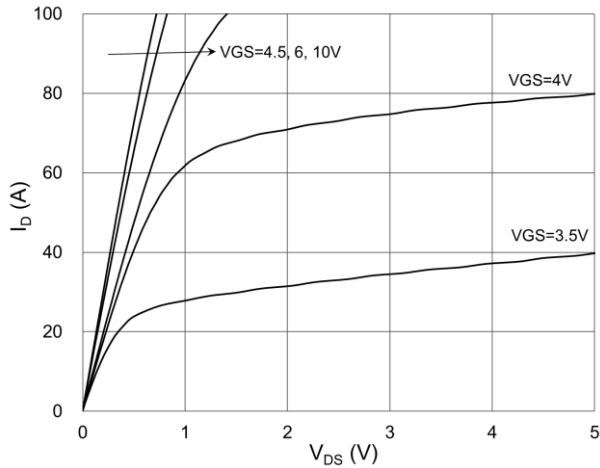


Fig2 Normalized $R_{DS(on)}$ vs. T_J

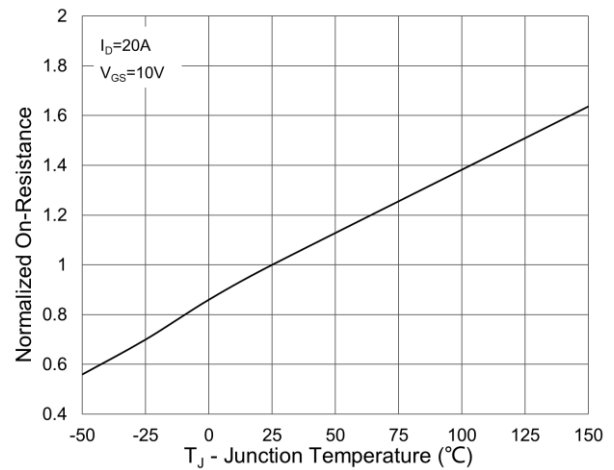


Fig3 Gate Charge Waveform

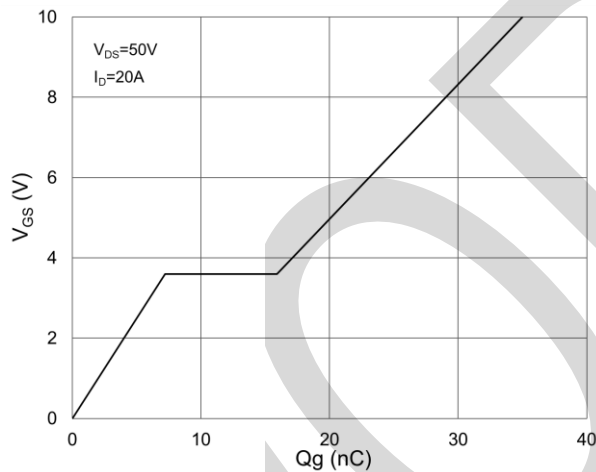


Fig4 Transfer Characteristics

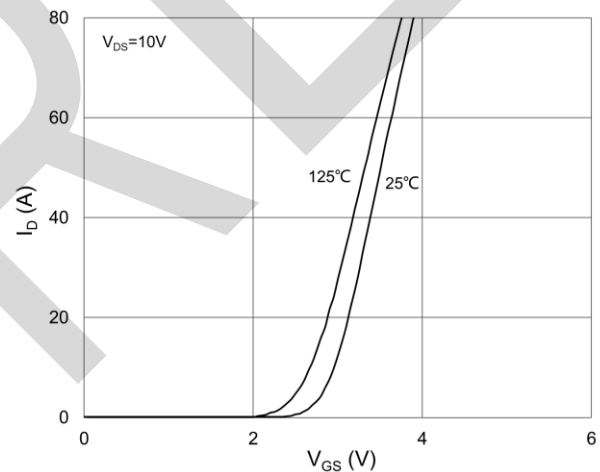


Fig5 $R_{DS(on)}$ vs. Drain Current and Gate Voltage

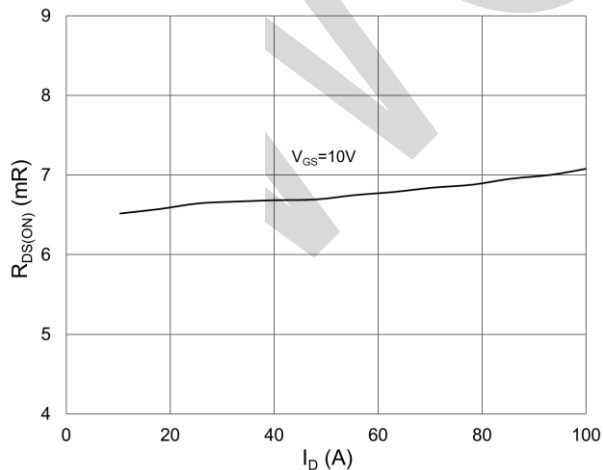
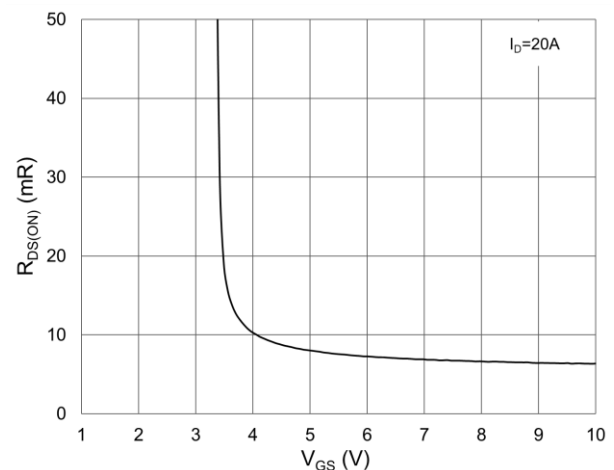


Fig6 $R_{DS(on)}$ vs. Gate Voltage



Typical Characteristics

Fig7 Capacitance Characteristics

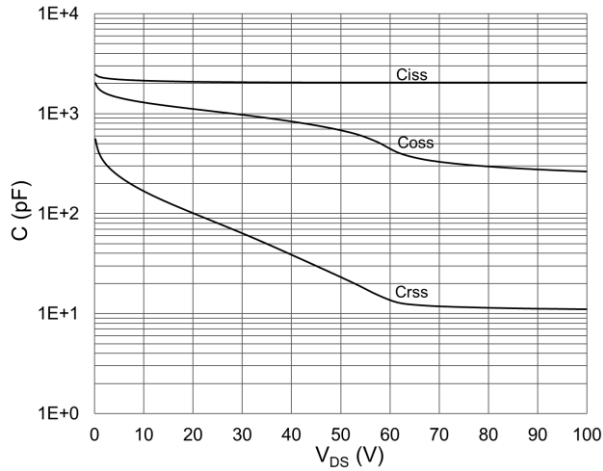


Fig8 Drain Current Derating

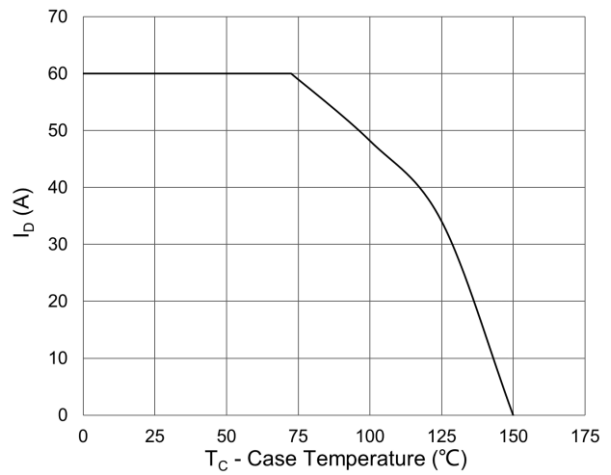


Fig9 Power Dissipation

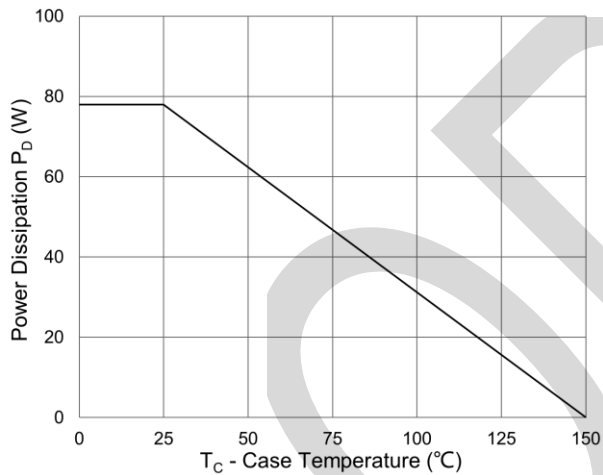


Fig10 Source-Drain Diode Forward Characteristics

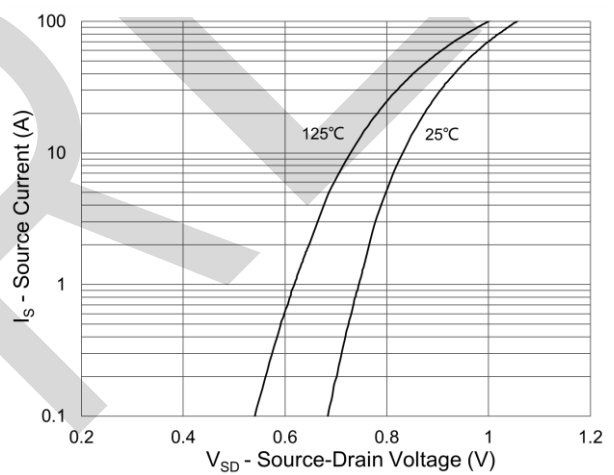


Fig11 Normalized Threshold Voltage vs. T_J

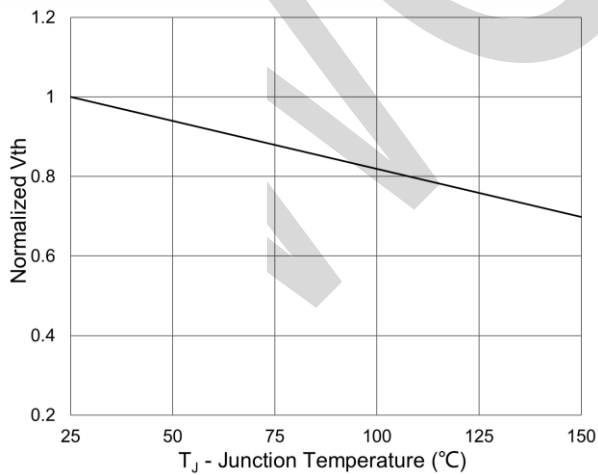
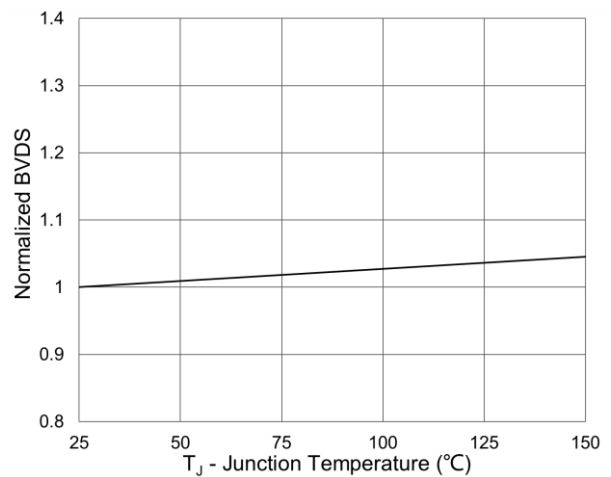


Fig12 Normalized Breakdown Voltage vs. T_J



Typical Characteristics

Fig13 Maximum Safe Operation Area

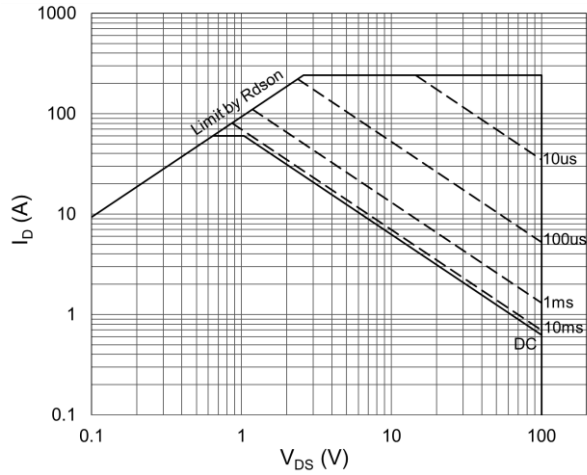
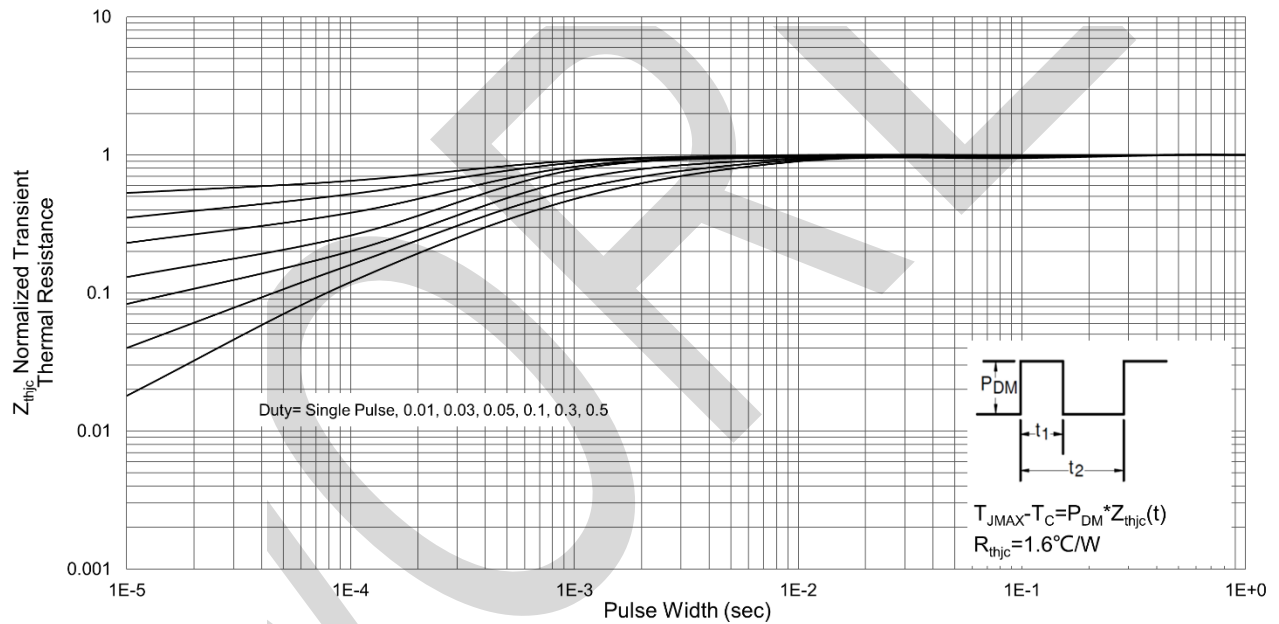
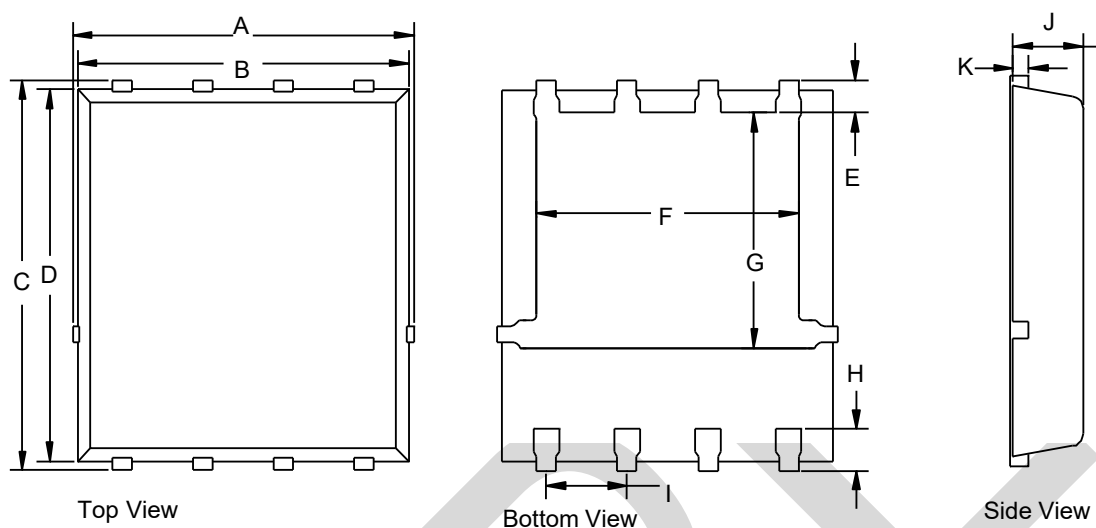


Fig14 Normalized Transient Impedance



PACKAGE OUTLINE DIMENSIONS

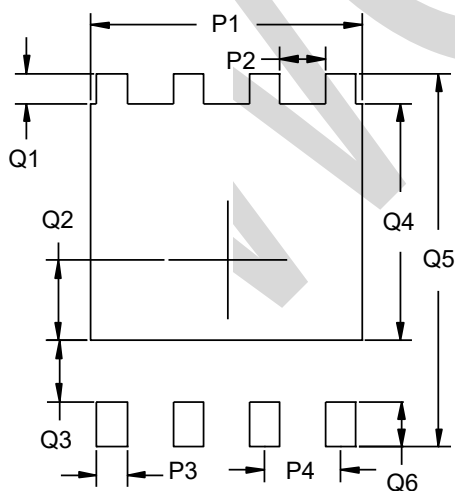
PDFN5X6



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

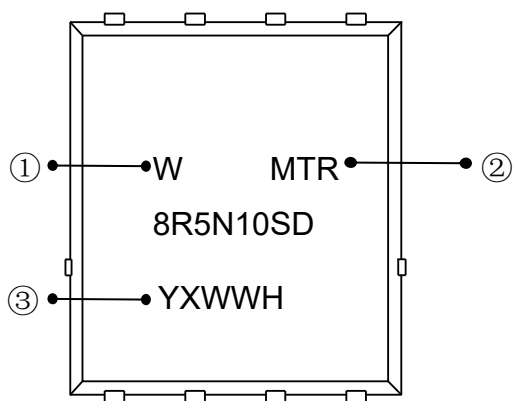


UNIT		P1	P2	P3	P4	Q1
mm	min	4.52	0.76	0.51	1.27	0.50
mil	min	177.9	29.9	20.07	50.0	20.0

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 : MTR8R5N10SD

③ PDC information :

