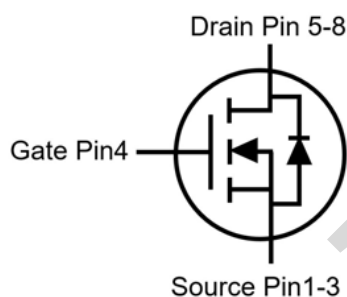
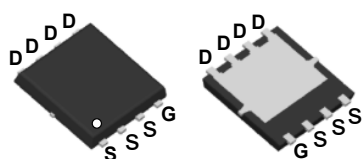


SGT N-channel Power MOSFET

MTR7R8N10SD PDFN5x6



V_{DS}	100	V
$R_{DS(on),TYP@ V_{GS}=10V}$	6.0	m Ω
I_D	85	A

Features

- 1、Low on – resistance
- 2、High power package (PDFN5X6)
- 3、SGT N-channel Power MOSFET
- 4、Halogen free

Applications

- 1、Load Switch for Portable Devices
- 2、Battery Management System

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 @ $V_{GS}=10V$	$T_C=25^\circ\text{C}$	85
		$T_C=100^\circ\text{C}$	53.5
I_{DM}	Pulse drain current tested ①	$T_C=25^\circ\text{C}$	340
E_{AS}	Avalanche energy, single pulsed ②	135.2	mJ
P_D	Maximum power dissipation	$T_C=25^\circ\text{C}$	104
T_{STG}, T_J	Storage and Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	1.2	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	50	°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	1.7	2.2	V
R _{DS(on)}	Drain-Source On-State Resistance ③	V _{GS} =10V, I _D =20A	--	6.0	7.8	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V , f=1MHz	--	1900	--	pF
C _{oss}	Output Capacitance		--	710	--	pF
C _{rss}	Reverse Transfer Capacitance		--	16	--	pF
R _g	Gate Resistance	V _{DS} =0V, f=1MHz	--	2.0	--	Ω
Q _g	Total Gate Charge	V _{DS} =50V, I _D =20A , V _{GS} =10V	--	32.3	--	nC
Q _{gs}	Gate-Source Charge		--	4.6	--	nC
Q _{gd}	Gate-Drain Charge		--	6.4	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	T _j =25°C, V _{DD} =50V, I _D =20A, V _{GS} =10V, R _G =3Ω	--	9	--	ns
Tr	Turn-on Rise Time		--	21	--	ns
Td(off)	Turn-Off Delay Time		--	31	--	ns
Tf	Turn-Off Fall Time		--	13.8	--	ns

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

I _S	Maximum Continuous Drain Source Forward Current		--	--	85	A
I _{SM}	Maximum Pulsed Drain Source Forward Current		--	--	340	A
V _{SD}	Forward on voltage	I _{SD} =1A, V _{GS} =0V	--	--	0.7	V
T _{rr}	Reverse Recovery Time	V _{GS} =0V, I _{SD} =20A di/dt=100A/μs	--	52	--	ns
Q _{rr}	Reverse Recovery Charge		--	57.2	--	nC

NOTE: ① Repetitive rating; pulse width limited by max junction temperature.

② Limited by T_{Jmax}, starting T_J = 25°C, L=0.5mH, R_G=25Ω. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

Typical Characteristics

Figure 1. Safe Operating Area

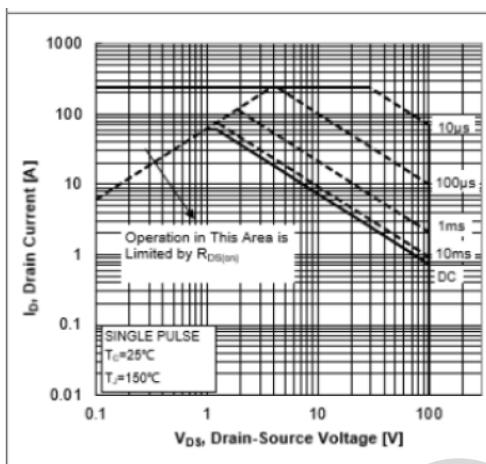


Figure 2. Maximum Power Dissipation vs Case Temperature

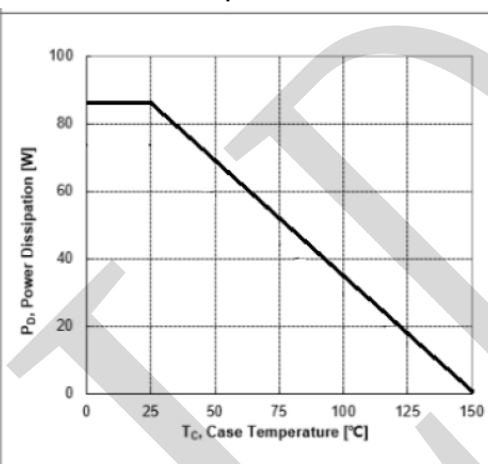


Figure 3. Maximum Continuous Drain Current vs Case Temperature

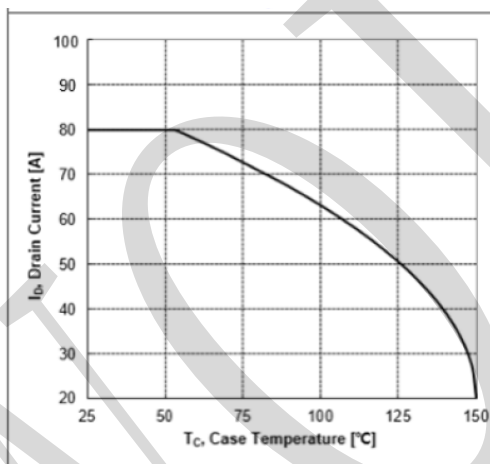


Figure 4. Typical Output Characteristics

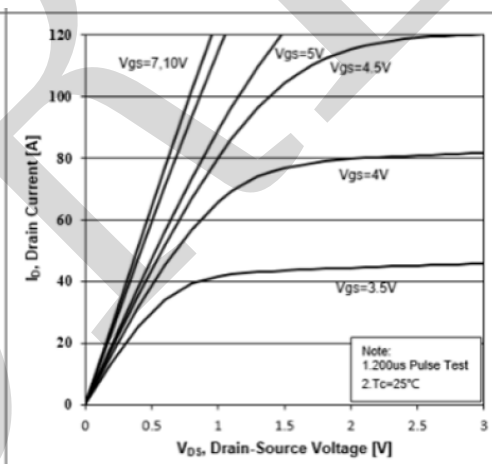
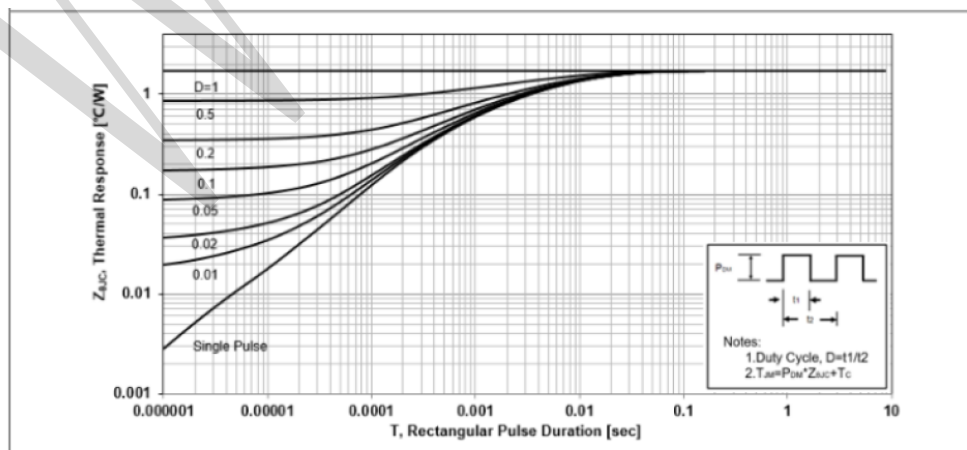


Figure 5. Transient Thermal Impedance



Typical Characteristics

Figure 6. Typical Transfer Characteristics

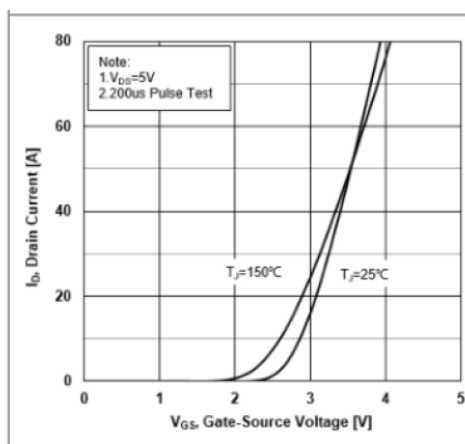


Figure 7. Source-Drain Diode Forward Characteristics

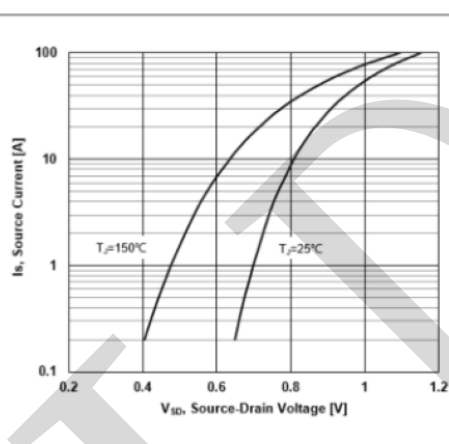


Figure 8. Drain-Source On-Resistance vs Drain Current

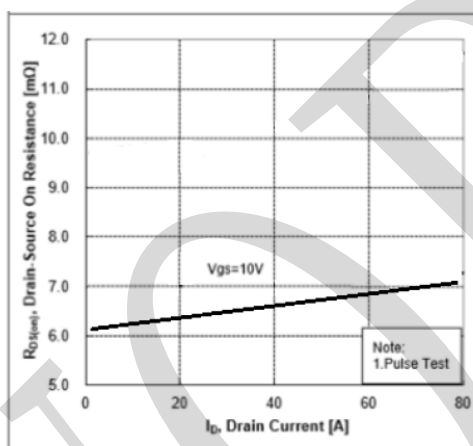


Figure 9. Normalized On-Resistance vs Junction Temperature

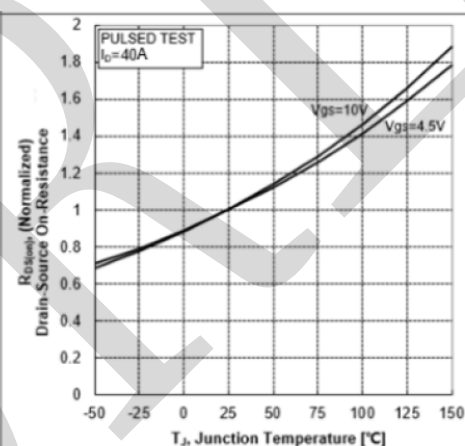


Figure 10. Normalized Threshold Voltage vs Junction Temperature

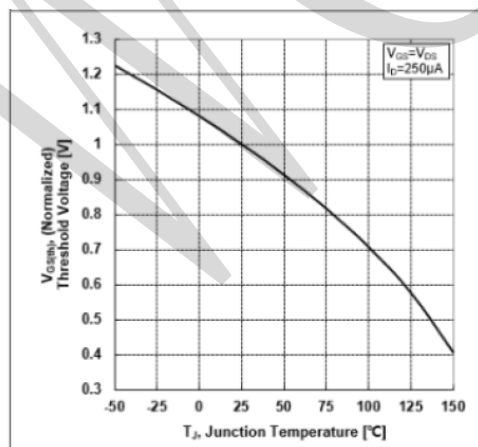
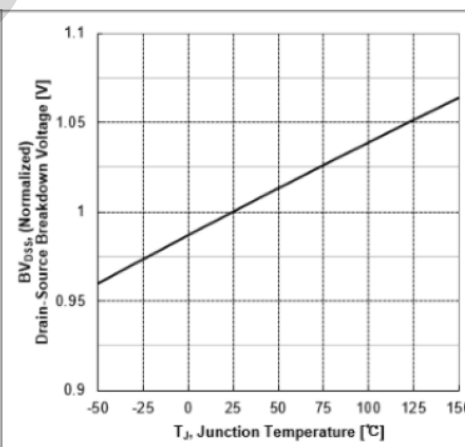


Figure 11. Normalized Breakdown Voltage vs Junction Temperature



Typical Characteristics

Figure 12. Capacitance Characteristics

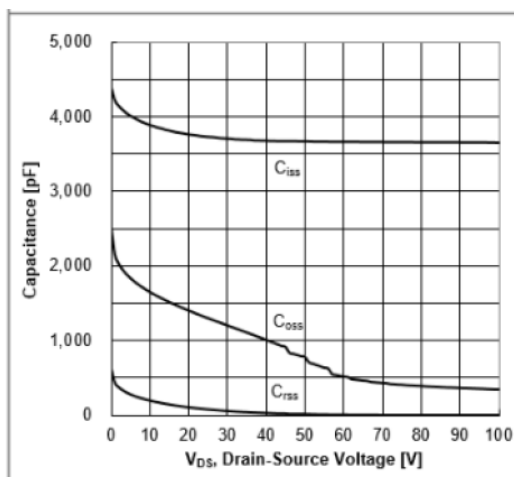
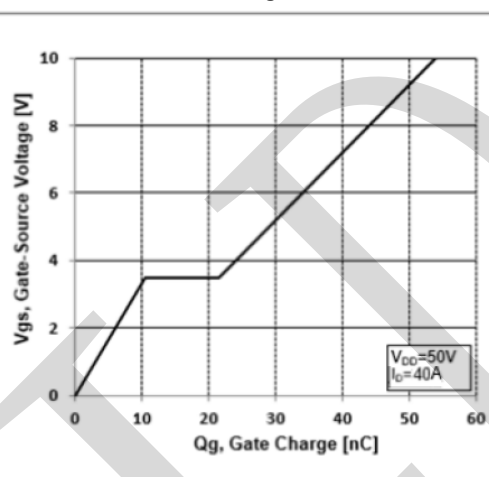
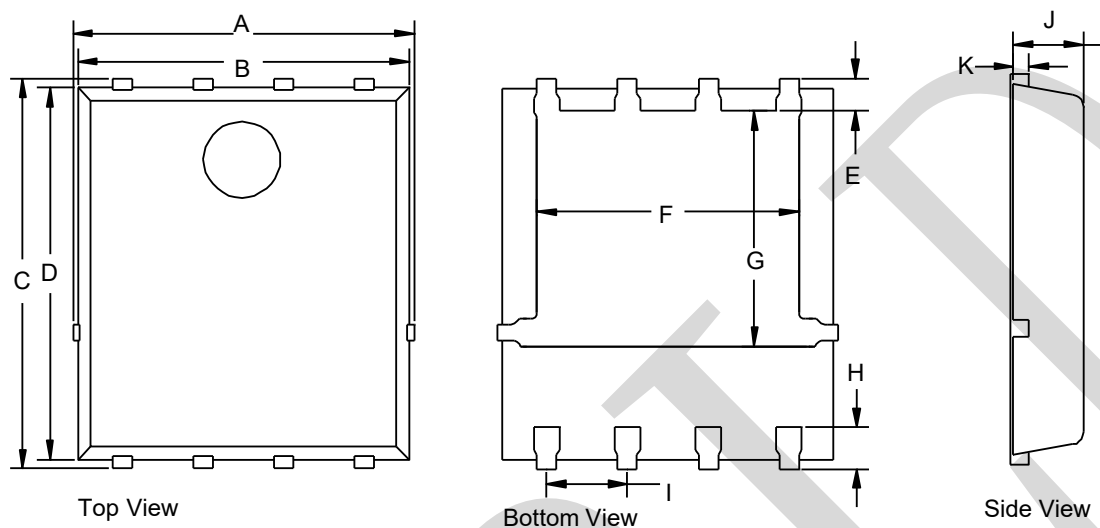


Figure 13. Typical Gate vs Gate-Source Voltage



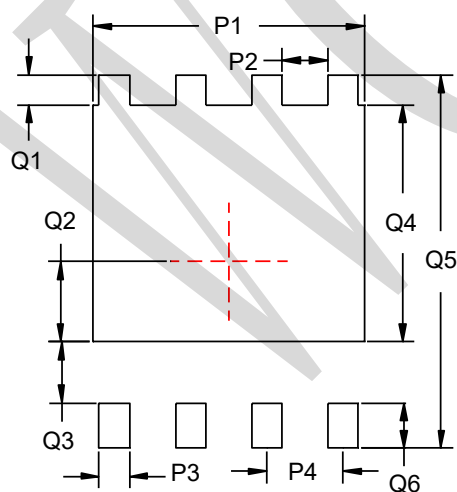
PACKAGE OUTLINE DIMENSIONS



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