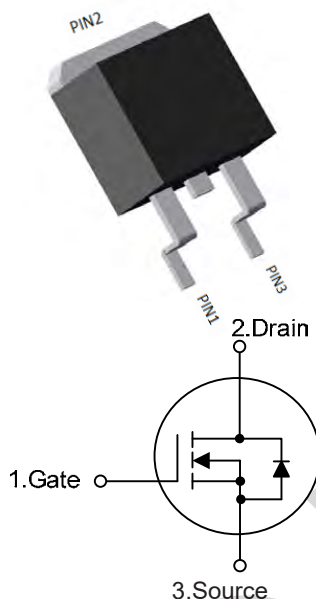


SGT N-channel Power MOSFET

MTR007N15CTB

TO-263



V_{DS}	150	V
$R_{DS(on),TYP}@ V_{GS}=10\text{ V}$	5.8	m Ω
I_D	140	A

Features

- 1、Low on – resistance
- 2、Package TO-263
- 3、SGT N-channel Power MOSFET

Applications

- 1、Load Switch for Portable Devices
- 2、DC/DC Converter

Maximum ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		150	V
V_{GS}	Gate-Source voltage		± 20	V
I_D	Continuous drain current @ $V_{GS}=10\text{V}$	$T_C = 25^\circ\text{C}$	140	A
		$T_C = 100^\circ\text{C}$	98	A
I_{DM}	Pulse drain current tested(Note 1)	$T_C = 25^\circ\text{C}$	560	A
EAS	Avalanche energy, single pulsed(Note 2)		900	mJ
PD	Maximum power dissipation	$T_C = 25^\circ\text{C}$	400	W
	Derating Factor		2.69	W/ $^\circ\text{C}$
TSTG,TJ	Storage and Junction Temperature Range		-55 to 150	$^\circ\text{C}$

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature

2.EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = 40\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.372	$^{\circ}\text{C/W}$

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
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Static Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise stated)

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=150V, V_{GS}=0V$	--	--	1	μA
	Zero Gate Voltage Drain Current ($T_j = 125^{\circ}\text{C}$)	$V_{DS}=150V, V_{GS}=0V$	--	--	10	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	--	4.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=40A$	--	5.8	7.0	m Ω

Dynamic Electrical Characteristics @ $T_j = 25^{\circ}\text{C}$ (unless otherwise stated)

C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	--	10305	--	pF
C_{oss}	Output Capacitance		--	2273	--	pF
C_{rss}	Reverse Transfer Capacitance		--	466	--	pF
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=15A$	20	--	--	S
$Q_g(10V)$	Total Gate Charge	$V_{DS}=75V, I_D=70A, V_{GS}=10V$	--	177	--	nC
Q_{gs}	Gate-Source Charge		--	62	--	nC
Q_{gd}	Gate-Drain Charge		--	58	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =30V, I _D =40A, R _G =2.5Ω, V _{GS} =10V R _L =15Ω,	--	15	--	ns
Tr	Turn-on Rise Time		--	32.3	--	ns
Td(off)	Turn-Off Delay Time		--	24	--	ns
Tf	Turn-Off Fall Time		--	15	--	ns

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

ISD	Source-drain Current(Body Diode)		--	140	--	A
ISDM	Pulsed Source-Drain Current (Body Diode)		--	560	--	A
VSD	Forward on voltage (Note1)	I _{SD} =40A, V _{GS} =0V	--	0.9	0.99	V
Trr	Reverse Recovery Time (Note1)	I _F =30A, di/dt=100A/μs	--	45	--	ns
Qrr	Reverse Recovery Charge (Note1)		--	80	--	nC
Ton	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L _S +L _D)				

Notes:

1.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1.5%, R_G=25Ω, Starting T_J=25°C

Typical Characteristics

Figure1. Output Characteristics

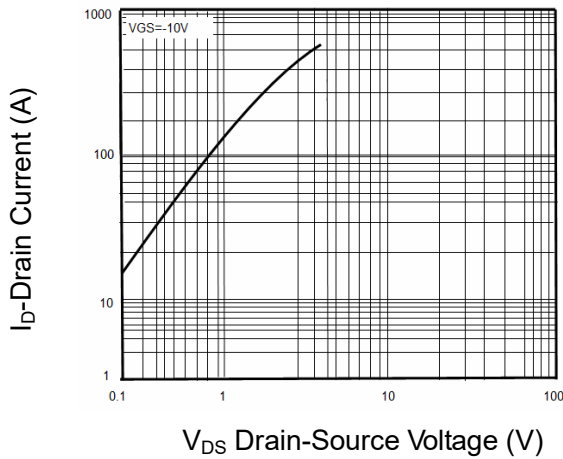


Figure2. Transfer Characteristics

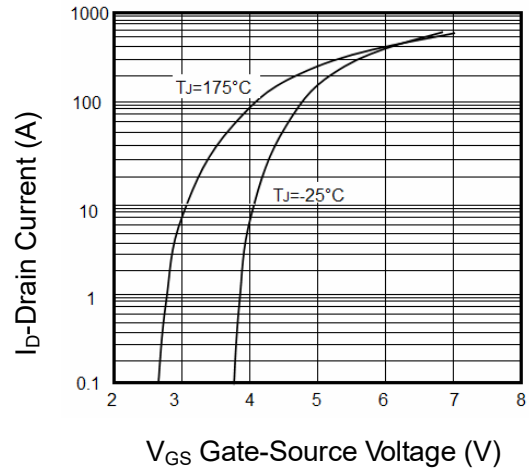


Figure3. BVDSS vs Junction Temperature

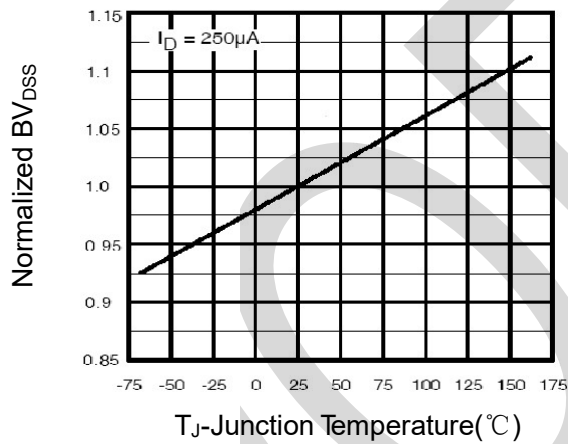


Figure4. ID vs Junction Temperature

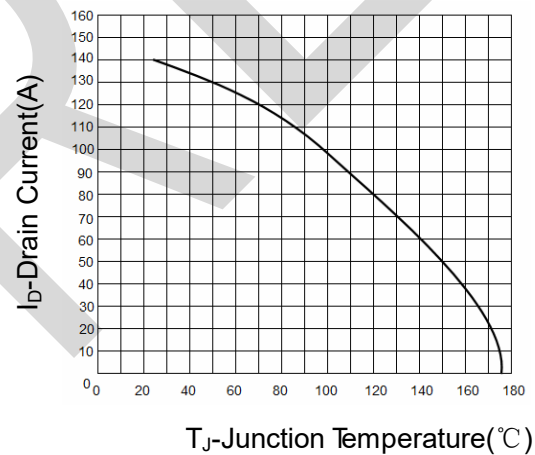


Figure5. VGS(th) vs Junction Temperature

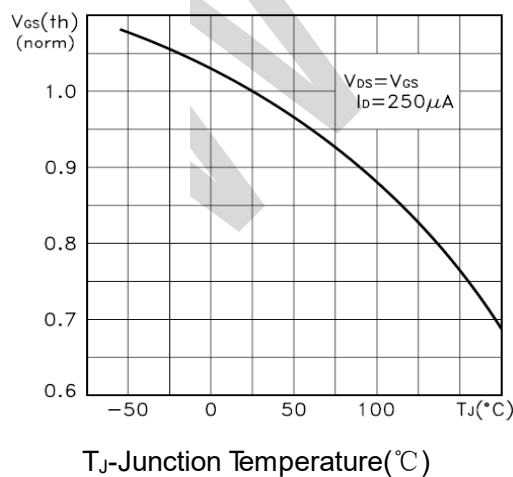
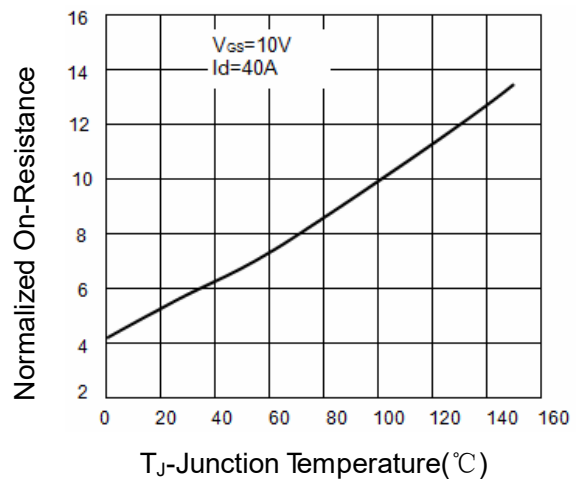


Figure6. Rdson Vs Junction Temperature



Typical Characteristics

Figure7. Gate Charge

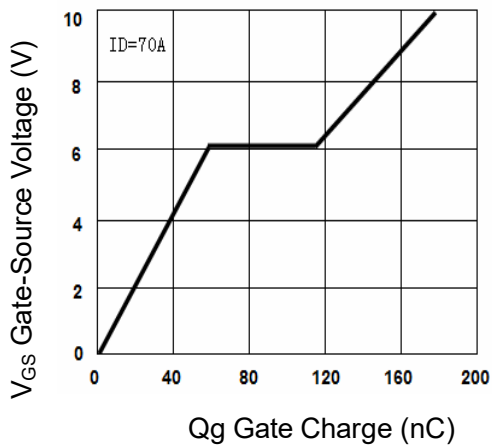


Figure8. Capacitance vs Vds

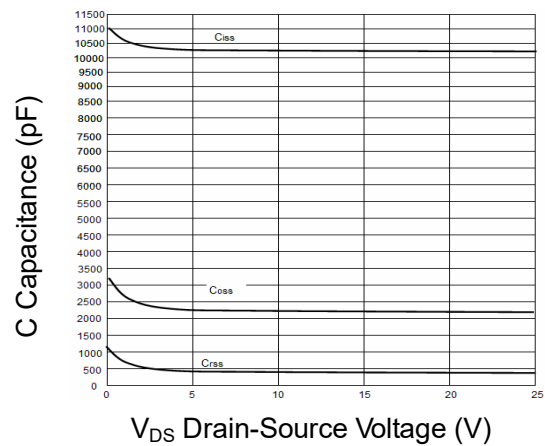


Figure9. Source- Drain Diode Forward

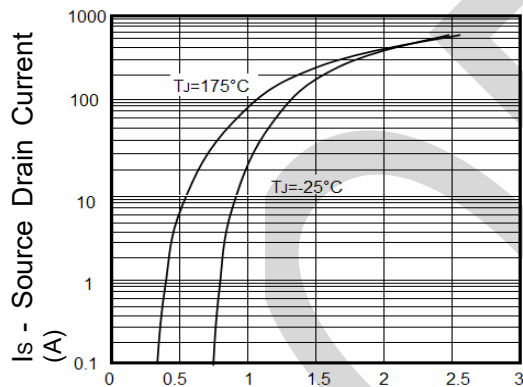


Figure10. Safe Operation Area

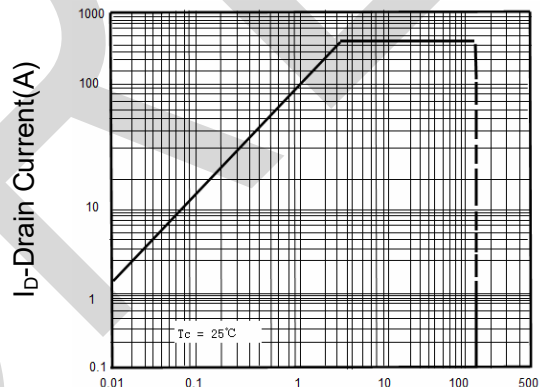
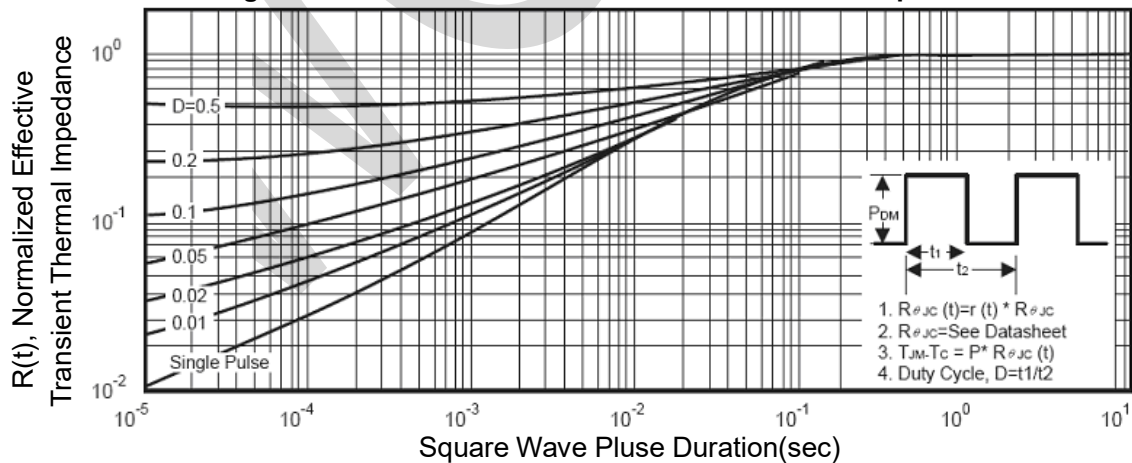
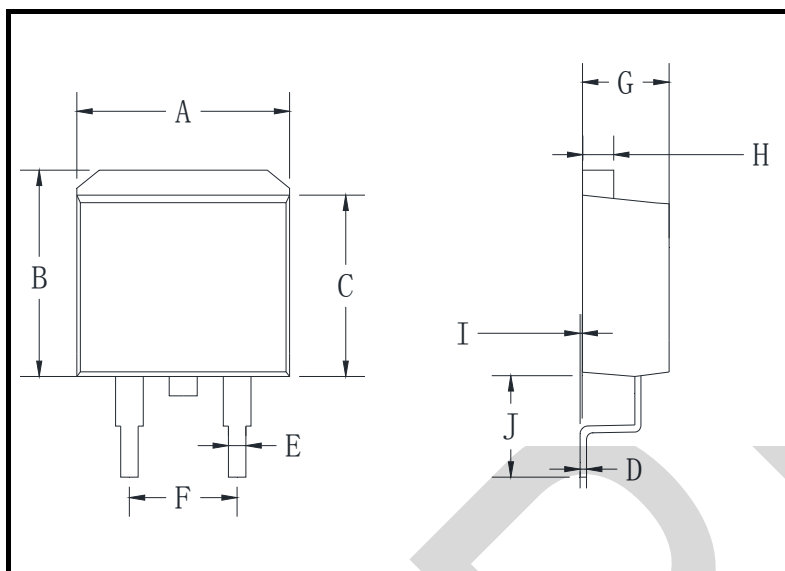


Figure11. Normalized Maximum Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

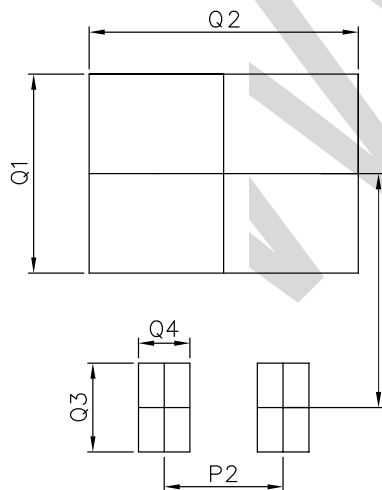
TO-263



TO-263 mechanical data

UNIT		A	B	C	D	E	F	G	H	I	J
mm	max	11.5	10.5	9.0	0.64	0.94	5.6	5.1	1.4	0.6	6.1
	min	9.5	9.7	8.4	0.28	0.68	4.5	4.0	1.1	0	4.9
mil	max	452.7	413.3	354.3	25.2	37.0	220.5	200.8	55.1	23.6	240.1
	min	374.0	381.8	330.7	11.0	26.7	177.2	157.5	43.3	0	192.9

TO-263 Suggested Pad Layout



UNIT		P1	P2	Q1	Q2	Q3	Q4
mm	min	10.0	4.00	8.5	11.5	3.8	2.1
mil	min	393.3	157.5	39.37	334.6	149.6	82.7