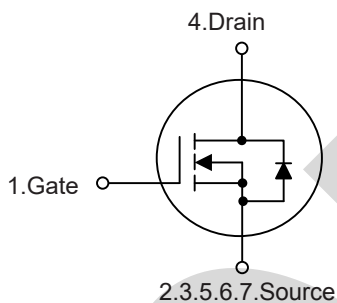
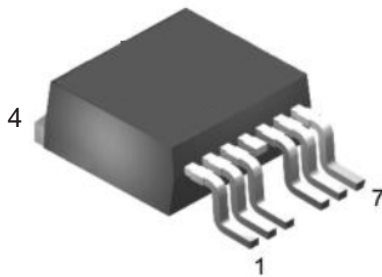


SGT N-channel Power MOSFET

MTR3R7N10CTG

TO-263



V_{DS}	100	V
$R_{DS(on),TYP}@ V_{GS}=10\text{ V}$	3.1	m Ω
I_D	200	A

Features

- 1、 Low on – resistance
- 2、 Package TO-263-7
- 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	100	V	
V_{GS}	Gate-Source voltage	± 20	V	
I_D	Continuous drain current @ $V_{GS}=10\text{V}$	$T_C = 25^\circ\text{C}$ (Silicon limit)	220	A
		$T_C = 25^\circ\text{C}$ (Package limit)	200	A
		$T_C = 100^\circ\text{C}$ (Silicon limit)	110	A
I_{DM}	Pulse drain current tested ①	$T_C = 25^\circ\text{C}$	480	A
E_{AS}	Avalanche energy, single pulsed ②		992	mJ
P_D	Maximum power dissipation	$T_C = 25^\circ\text{C}$	340	W
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R θ JC	Thermal Resistance, Junction-to-Case	0.55	°C/W
R θ JA	Thermal Resistance, Junction-to-Ambient	62	°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	2.0	3.0	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance ④	V _{GS} =10V, I _D =50A	--	3.1	3.7	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =40V, V _{GS} =0V , f=1MHz	--	7300	--	pF
C _{oss}	Output Capacitance		--	2700	--	pF
C _{rss}	Reverse Transfer Capacitance		--	309	--	pF
R _g	Gate Resistance	V _{GS} =0V, f=1MHz V _{DS} =0V	--	1.6	--	Ω
Q _g (10V)	Total Gate Charge	V _{DS} =50V, I _D =50A, V _{GS} =10V, I _D =20A	--	90	--	nC
Q _{gs}	Gate-Source Charge		--	30	--	nC
Q _{gd}	Gate-Drain Charge		--	20	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =50V, V _{GS} =10V, R _L =3.0Ω, T _J =25°C	--	27	--	ns
Tr	Turn-on Rise Time		--	32	--	ns
Td(off)	Turn-Off Delay Time		--	50	--	ns
Tf	Turn-Off Fall Time		--	27	--	ns

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

VSD	Forward on voltage	I _{SD} =50A, V _{GS} =0V	--	0.85	1.2	V
Trr	Reverse Recovery Time	I _F =30A, di/dt=500A/μs	--	45	--	ns
Qrr	Reverse Recovery Charge	I _F =30A, di/dt=500A/μs	--	80	--	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, I_{AS} = 9A, V_{GS} = 10V. Part not recommended for use above this value
 ③ The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150°C.
 ④ Pulse width ≤ 380μs; duty cycle ≤ 2%.

Typical Characteristics

Fig 1: Output Characteristics

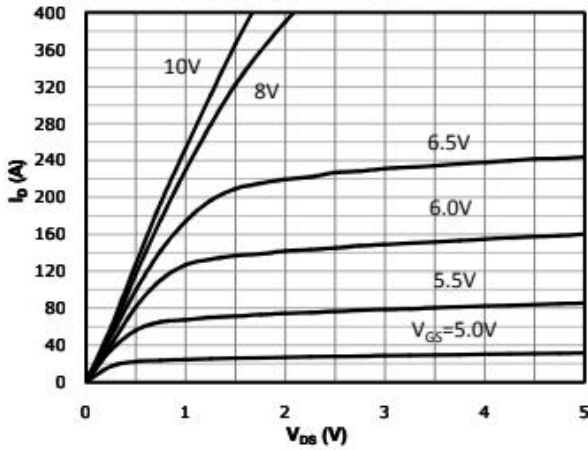


Fig 2: Transfer Characteristics

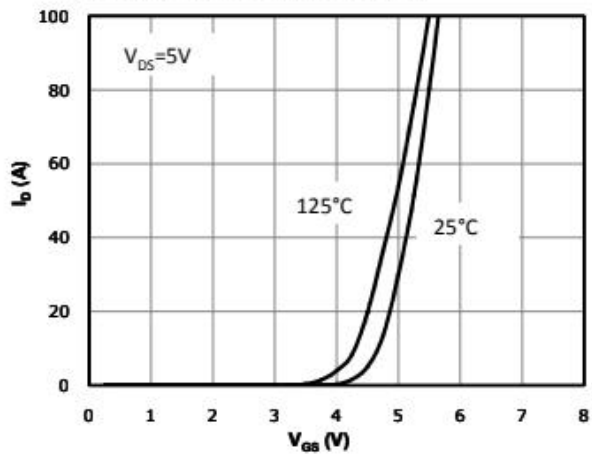


Fig 3: Rds(on) vs Drain Current and Gate Voltage

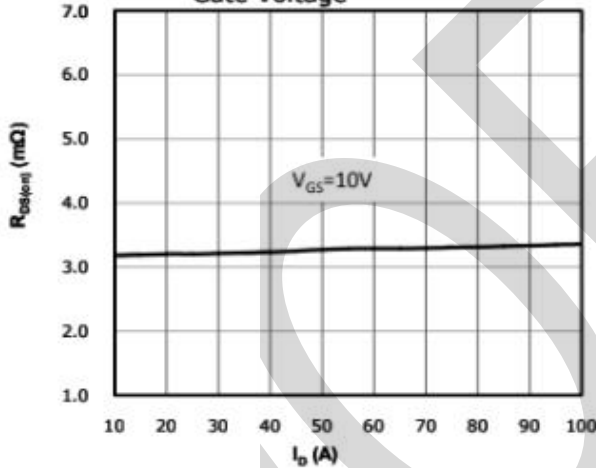


Fig 4: Rds(on) vs Gate Voltage

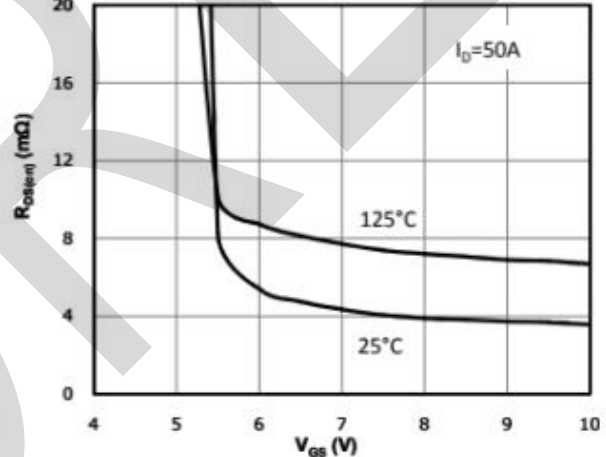


Fig 5: Rds(on) vs. Temperature

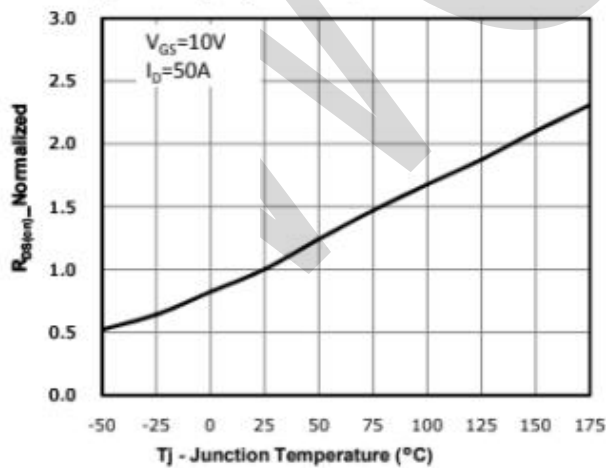
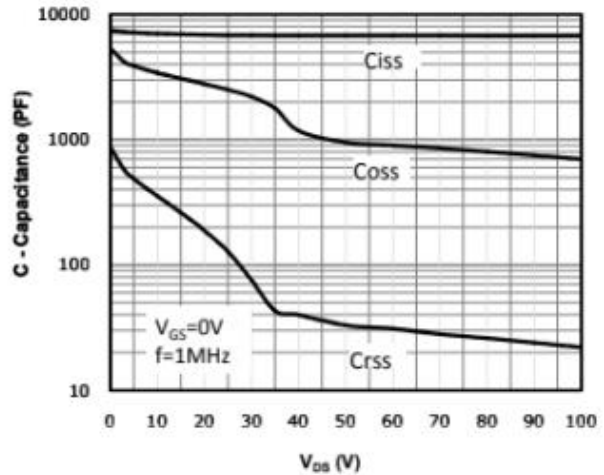


Fig 6: Capacitance Characteristics



Typical Characteristics

Fig 7: Gate Charge Characteristics

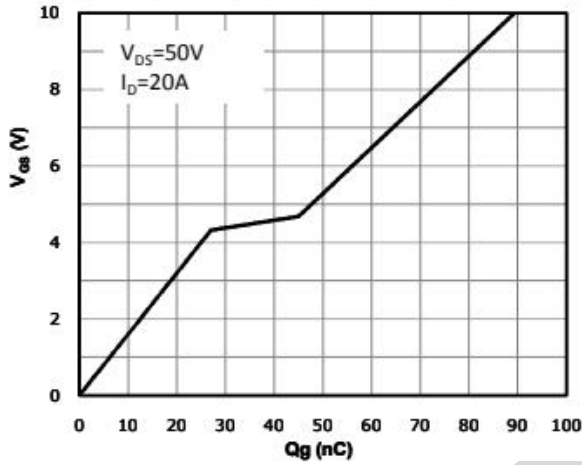


Fig 8: Body-diode Forward Characteristics

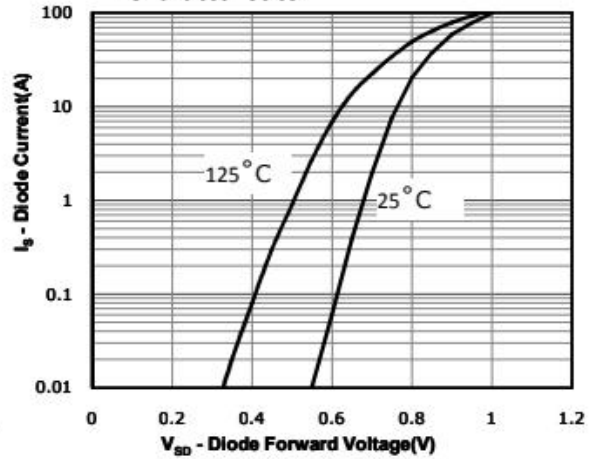


Fig 9: Power Dissipation

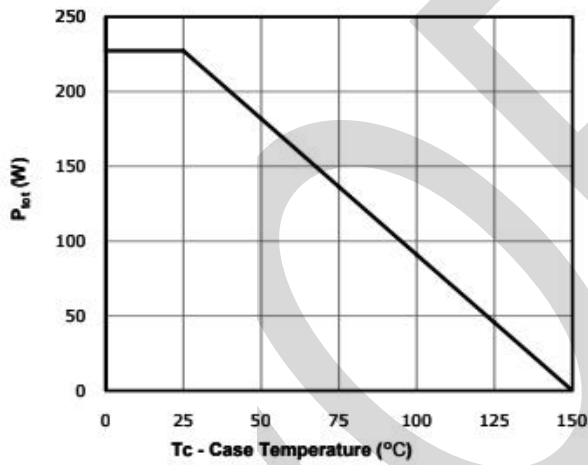


Fig 10: Drain Current Derating

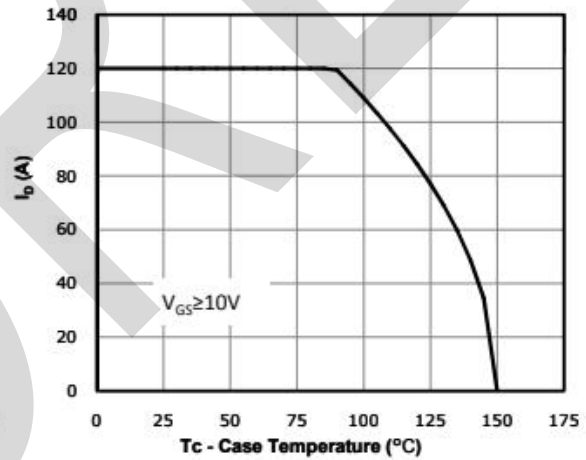


Fig 11: Safe Operating Area

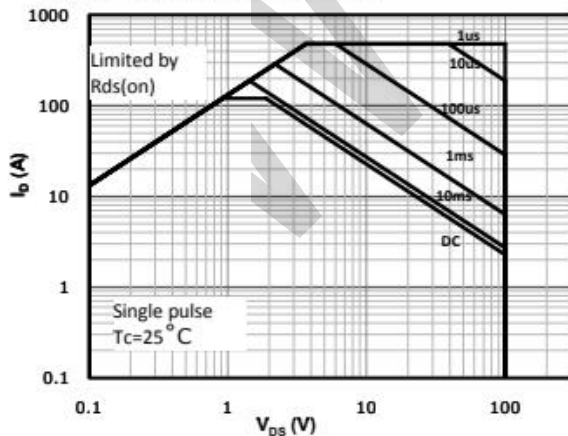
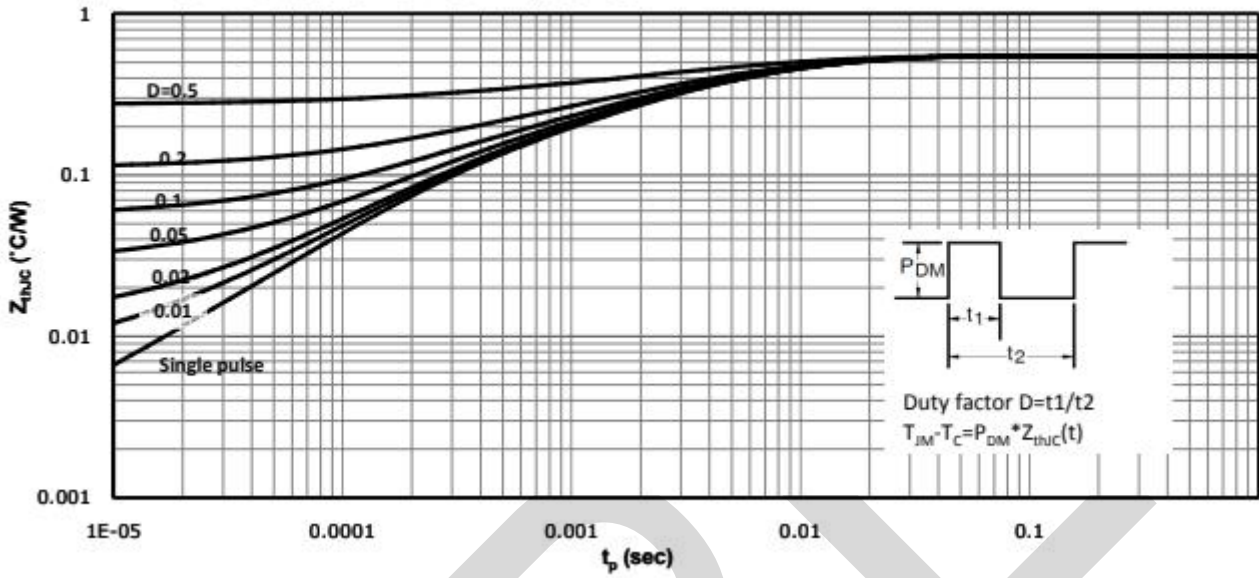
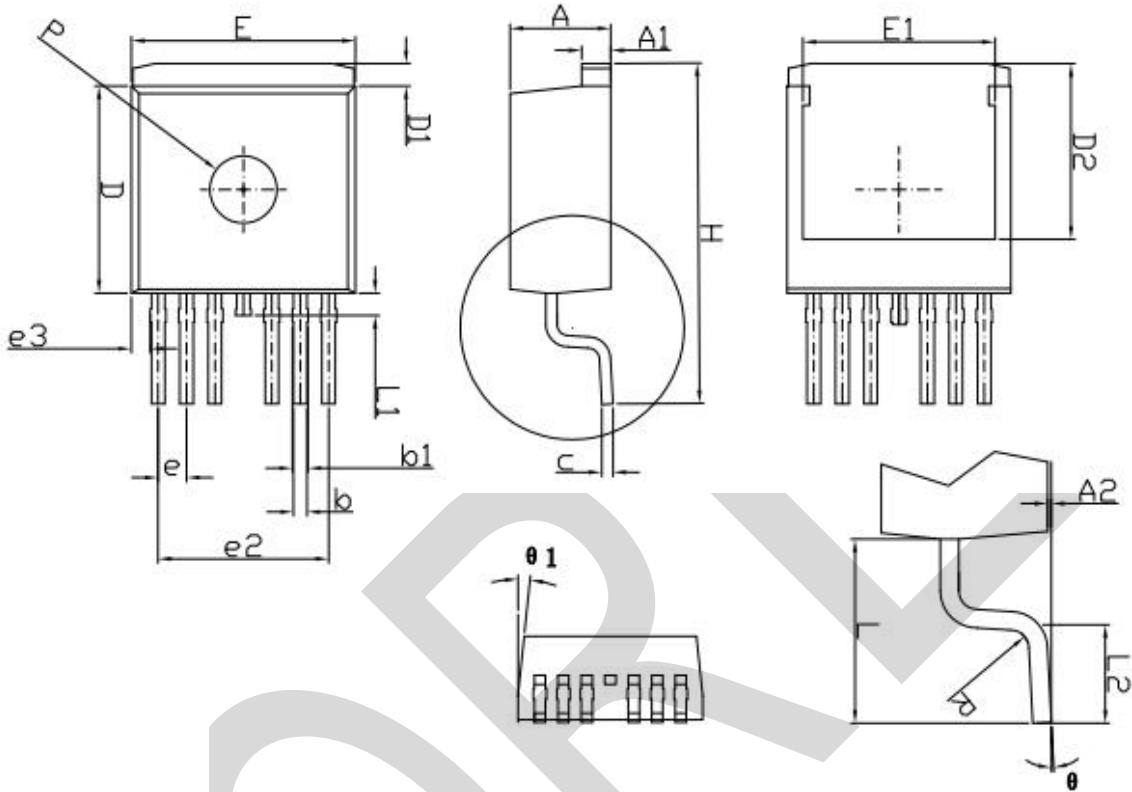


Fig 12: Max. Transient Thermal Impedance

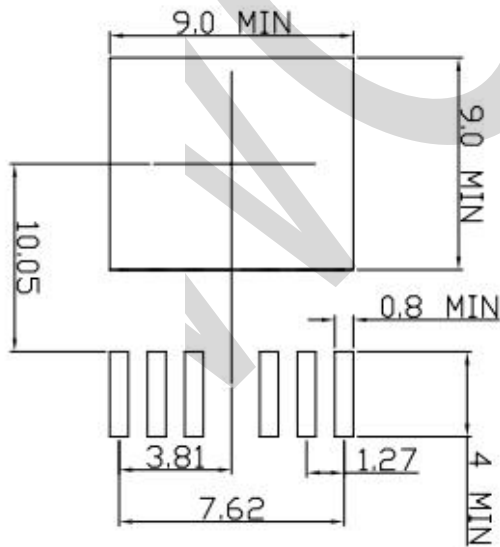


PACKAGE OUTLINE DIMENSIONS

TO-263-7



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.30	4.50	4.70
A1	1.20	1.30	1.40
A2	0.05	0.15	0.30
b	0.50	0.60	0.70
b1	0.50	0.70	0.90
c	0.40	0.50	0.60
D	9.05	9.25	9.45
D1	0.70	1.00	1.30
D2	7.35	7.85	8.35
E	9.80	10.00	10.20
E1	8.10	8.60	9.10
e	1.07	1.27	1.47
e2	7.32	7.62	7.92
e3	0.64	0.84	1.04
H	14.65	15.15	15.65
L	4.47	4.97	5.47
L1	0.90	1.20	1.50
L2	2.20	2.50	2.80
θ	0°	3°	8°
$\theta 1$	0°	6°	10°
ϕP	2.70	3.00	3.30