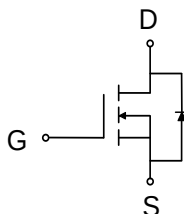
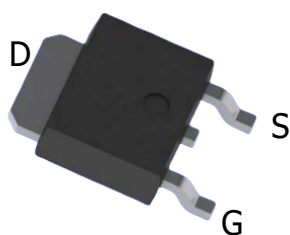


SGT N-Channel Power MOSFET

MTR7R7N10D

TO-252



Features

- LOW $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability

Applications

- Power Management in Telecom., Industrial Automatio
- Motor Driving in Power Tool, E-vehicle Robotics
- Current Switching in DC/DC&AC/DC(SR) Sub-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	$T_C = 25^\circ\text{C}$	70	A
I_{DM}	Pulse drain current tested ①	$T_C = 25^\circ\text{C}$	180	A
EAS	Avalanche energy, single pulsed ②		94	mJ
PD	Maximum power dissipation	$T_C = 25^\circ\text{C}$	90	W
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	1.0	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
--------	-----------	-----------	------	------	------	------

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	1.4	1.7	2.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	--	6.2	7.7	mΩ
		V _{GS} =4.5V, I _D =15A	--	9.1	11.6	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0 V , f=1MHz	--	1950	--	pF
C _{oss}	Output Capacitance		--	731	--	pF
C _{rss}	Reverse Transfer Capacitance		--	30	--	pF
Q _g	Total Gate Charge	V _{DD} =50V, I _D =20A , V _{GS} =10V	--	35.8	--	nC
Q _{gs}	Gate-Source Charge		--	7.8	--	nC
Q _{gd}	Gate-Drain Charge		--	8.8	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DD} =50V V _{GS} =10V R _L =2.5Ω R _G =3Ω	--	10.7	--	ns
Tr	Turn-on Rise Time		--	21	--	ns
Td(off)	Turn-Off Delay Time		--	31	--	ns
Tf	Turn-Off Fall Time		--	10.5	--	ns

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

VSD	Forward on voltage	I _S =1A, V _{GS} =0V	--	--	1.2	V
trr	Reverse Recovery Time	I _F =I _S , I _{SD} =20A, V _{GS} =0V dI _F /dt=100A/us	--	40	--	ns
Qrr	Reverse Recovery Charge		--	41	--	nC

Typical Performance Characteristics

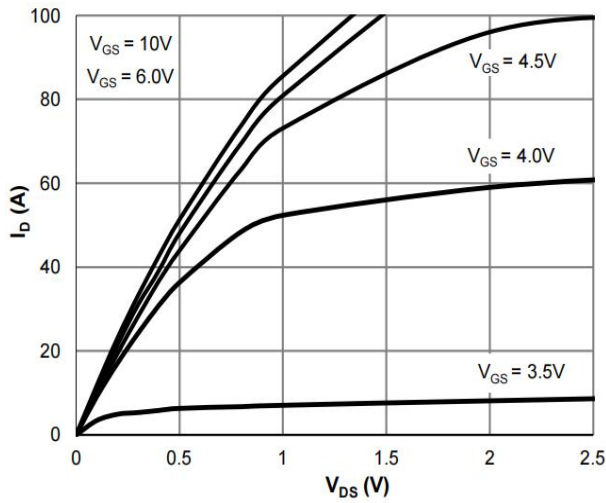


Figure 1: Saturation Characteristics

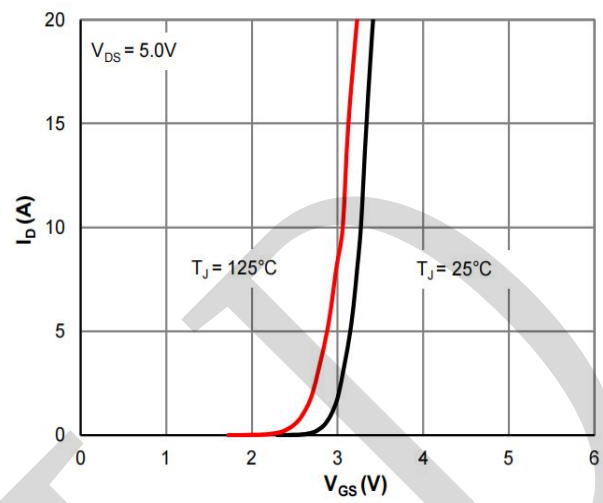


Figure 2: Transfer Characteristics

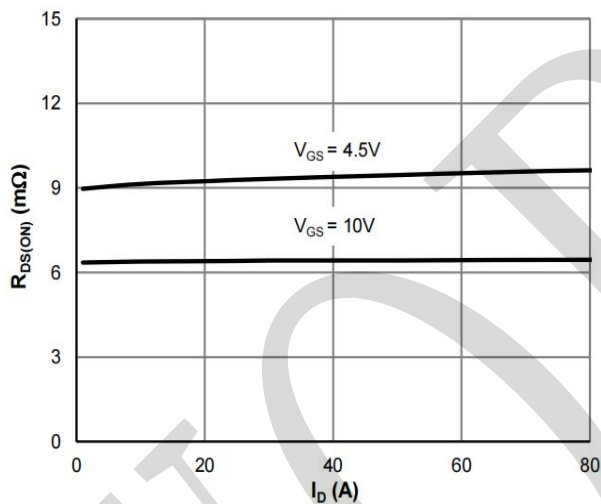


Figure 3: $R_{DS(ON)}$ vs. Drain Current

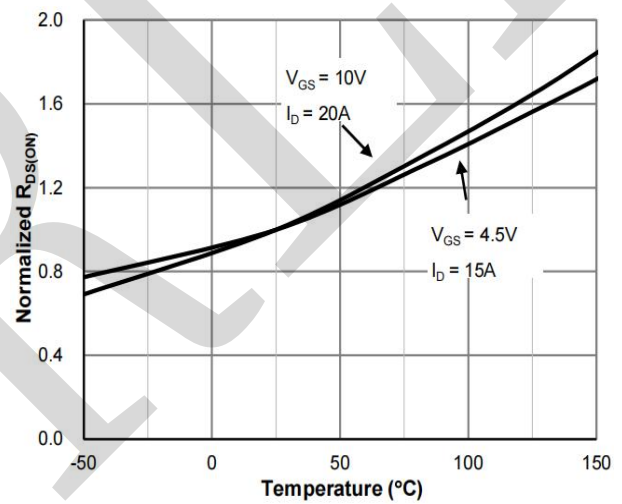


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

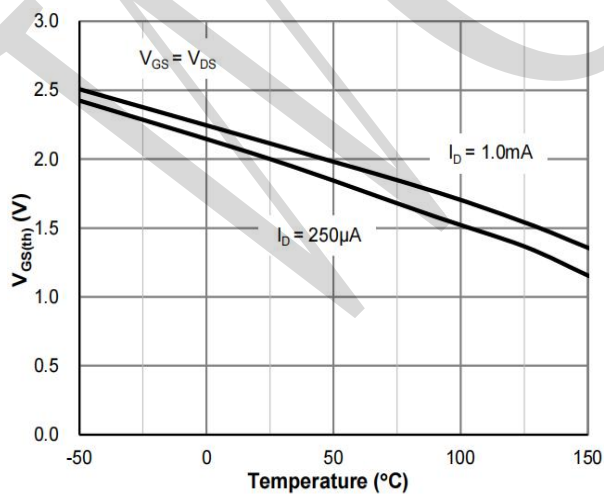


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

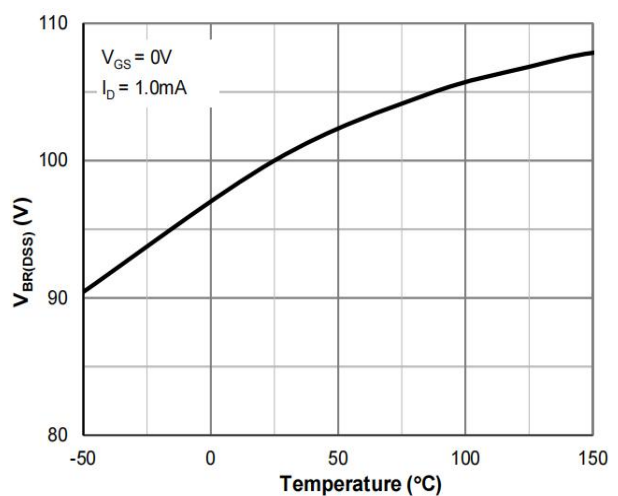


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

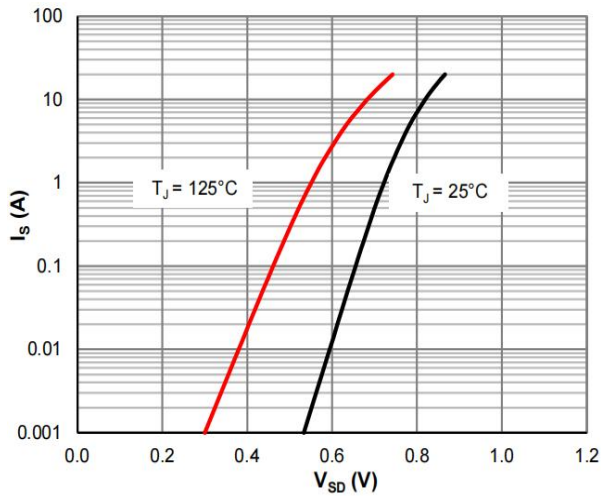


Figure 7: Body-Diode Characteristics

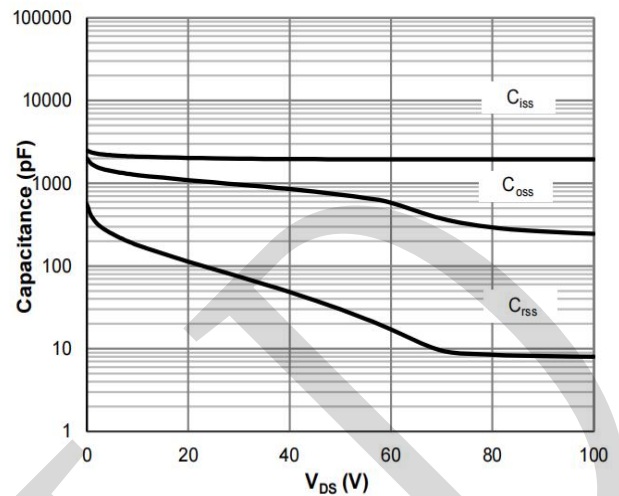


Figure 8: Capacitance Characteristics

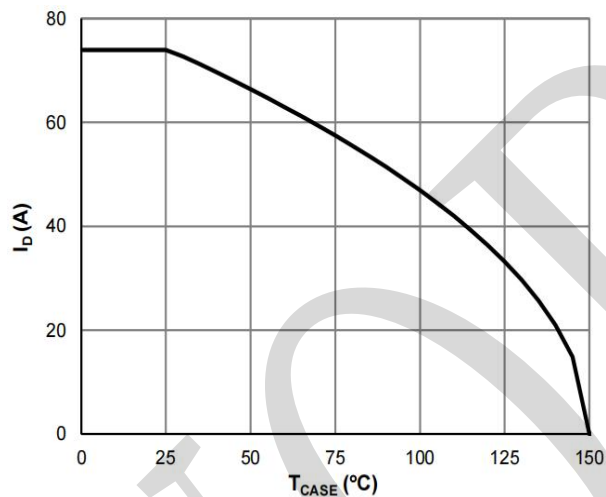


Figure 9: Current De-rating

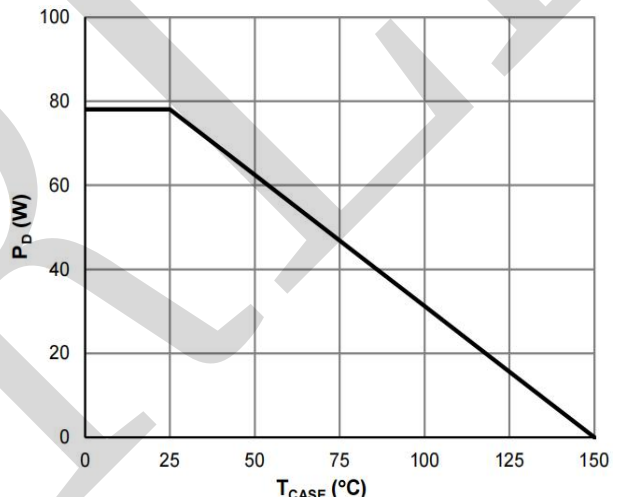


Figure 10: Power De-rating

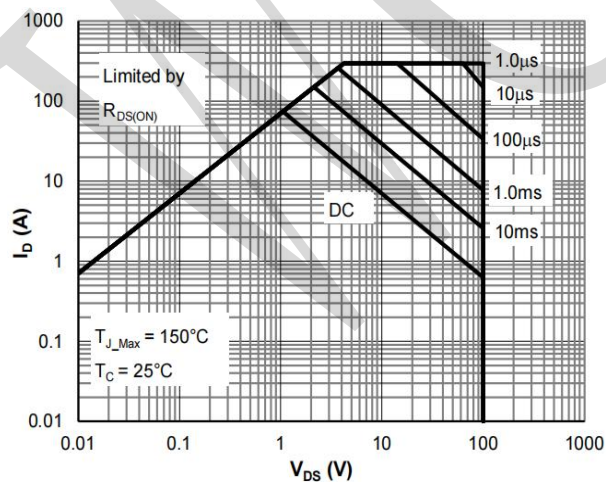


Figure 11: Maximum Safe Operating Area

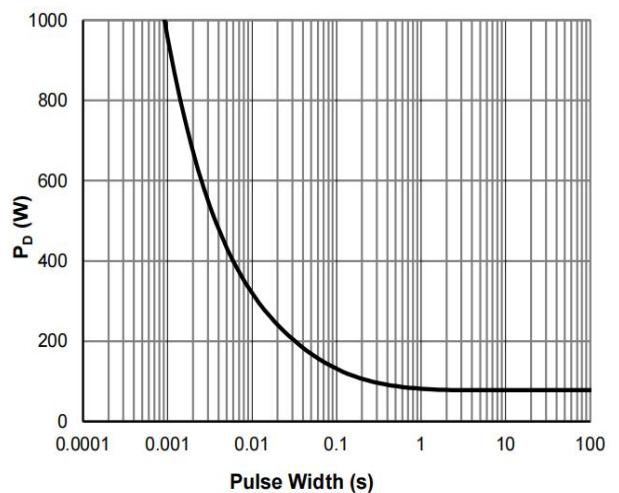
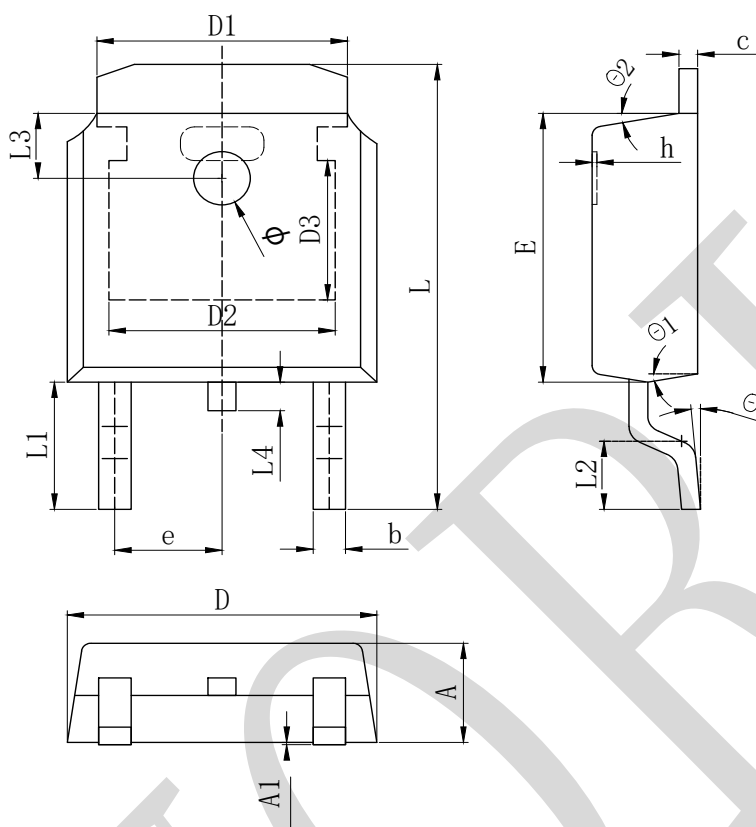


Figure 12: Single Pulse Power Rating, Junction-to-Case

PACKAGE OUTLINE DIMENSIONS

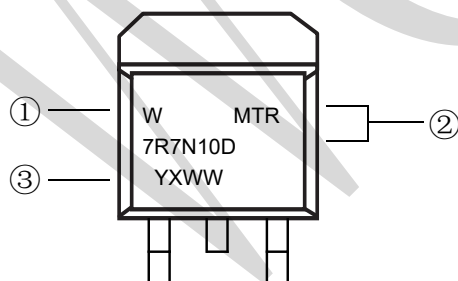
Note:unit mm

TO-252



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

Marking Information



①W : Company's trademark Product

②model : MTR7R7N10D PDC

③information :

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)