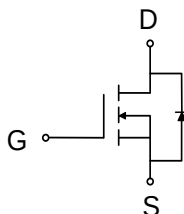


SGT N-Channel Power MOSFET

MTR7R2N15CT

TO-220AB



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		150	V
V _{GS}	Gate-Source voltage		±20	V
I _D	Continuous drain current	T _C =25°C	141	A
		T _C =100°C	89	A
I _{DM}	Pulse drain current tested	T _C =25°C	564	A
EAS	Avalanche energy, single pulsed ①		1156	mJ
PD	Maximum power dissipation	T _C =25°C	227	W
T _{STG} , T _J	Storage and Junction Temperature Range		-55 to 150	°C

NOTE: ① EAS Condition: $L=0.5\text{mH}$, $R_g=25\Omega$, Start $T_J=25^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	0.31	°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	150	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =150V, 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	--	4	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =30A	--	6.2	7.2	mΩ
g _{fs}	Transconductance	V _{DS} =5V, I _D =30A	--	145	--	S

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

C _{iss}	Input Capacitance	V _{DS} =75V, V _{GS} =0V, f=1MHz	--	5195	--	pF
C _{oss}	Output Capacitance		--	666	--	pF
C _{rss}	Reverse Transfer Capacitance		--	23	--	pF
Q _g	Total Gate Charge	V _{DS} =75V, I _D =50A, V _{GS} =10V	--	79	--	nC
Q _{gs}	Gate-Source Charge		--	31	--	nC
Q _{gd}	Gate-Drain Charge		--	17	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =40V V _{GS} =10V R _L =3Ω	--	18	--	ns
Tr	Turn-on Rise Time		--	100	--	ns
Td(off)	Turn-Off Delay Time		--	59	--	ns
Tf	Turn-Off Fall Time		--	99	--	ns

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

VSD	Forward on voltage	I _{SD} =50A, V _{GS} =0V	--	--	1.2	V
trr	Body Diode Reverse Recovery Time	I _F =30A, dI/dt=500A/μs	--	122	--	ns
Qrr	Body Diode Reverse Recovery Charge	I _F =60A, dI/dt=500A/μs	--	706	--	nC

Typical Characteristics

Fig 1: Output Characteristics

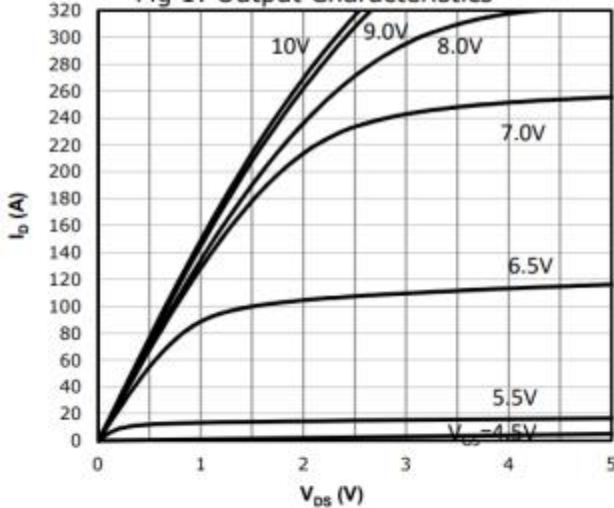


Fig 2: Transfer Characteristics

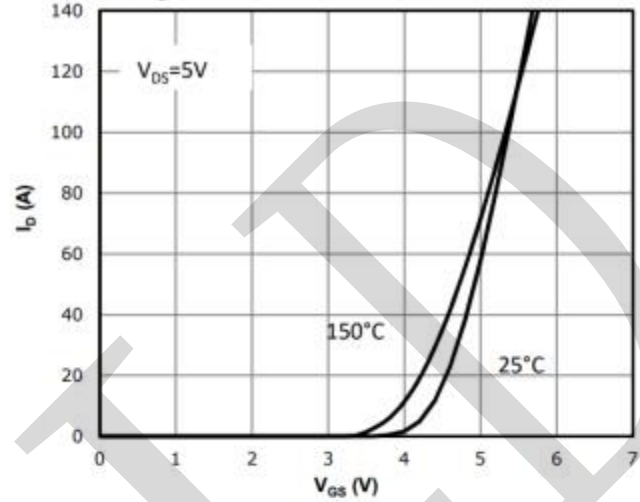


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

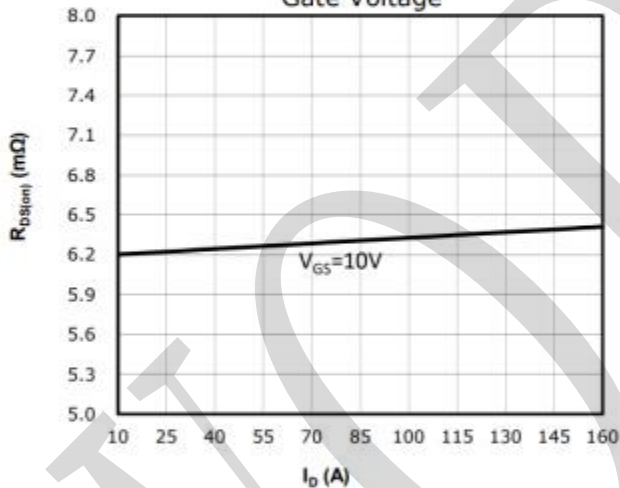


Fig 4: $R_{DS(on)}$ vs Gate Voltage

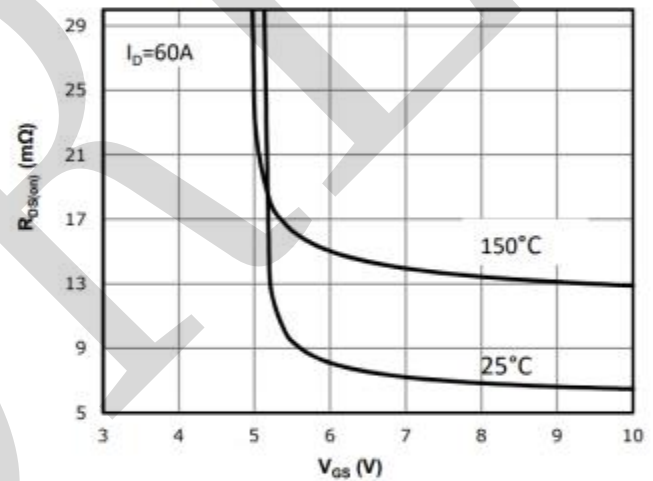


Fig 5: $R_{DS(on)}$ vs. Temperature

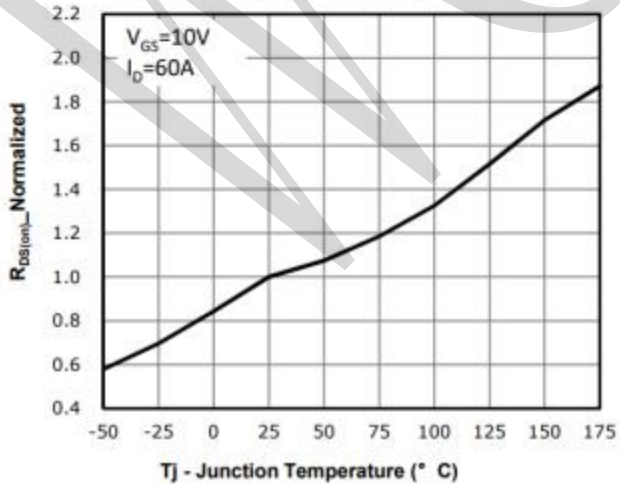
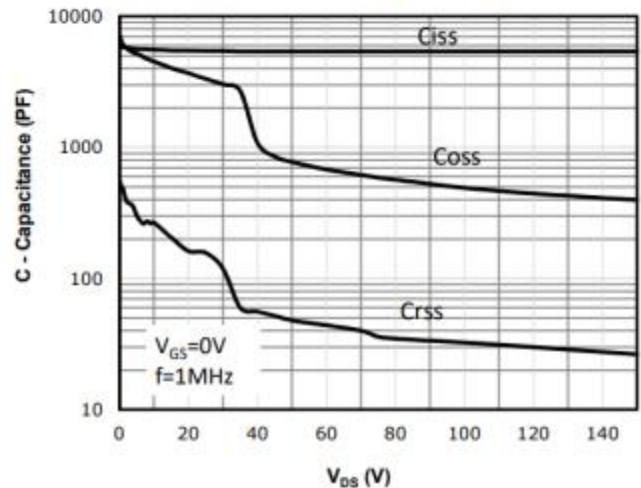


Fig 6: Capacitance Characteristics



Typical Characteristics

Fig 7: $V_{gs(th)}$ vs. Temperature

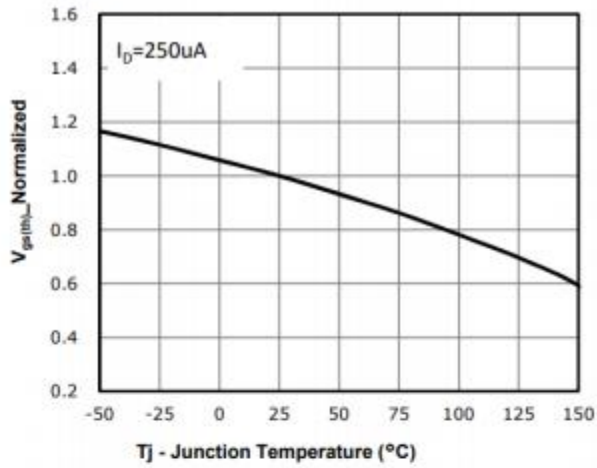


Fig 8: BV_{dss} vs. Temperature

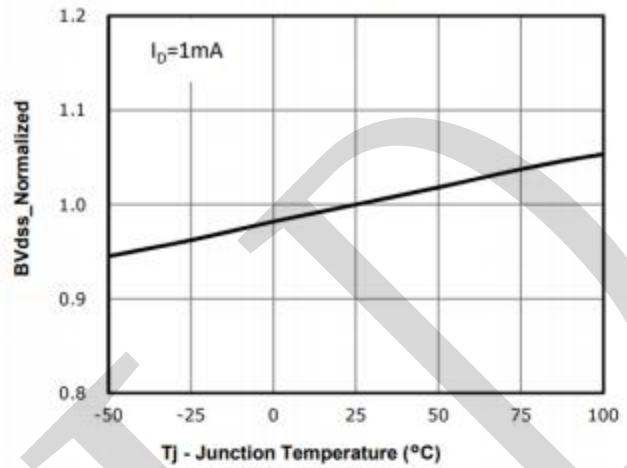


Fig 9: Gate Charge Characteristics

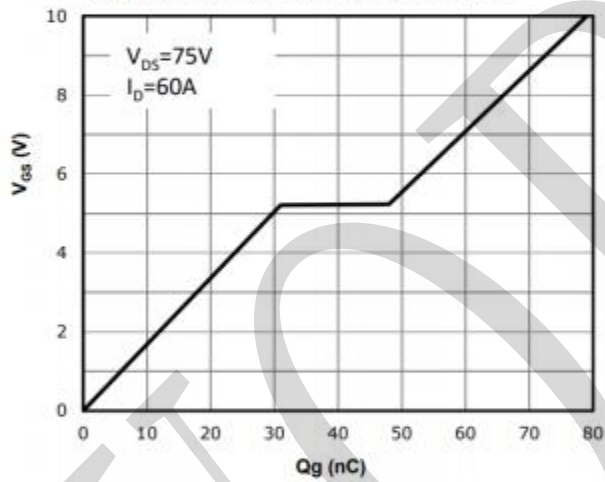


Fig 10: Body-diode Forward Characteristics

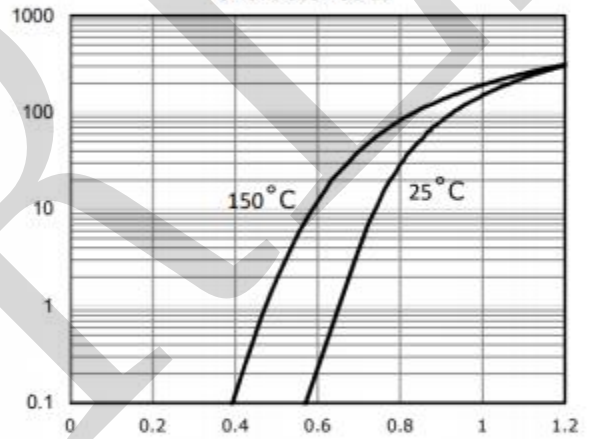


Fig 11: Power Dissipation

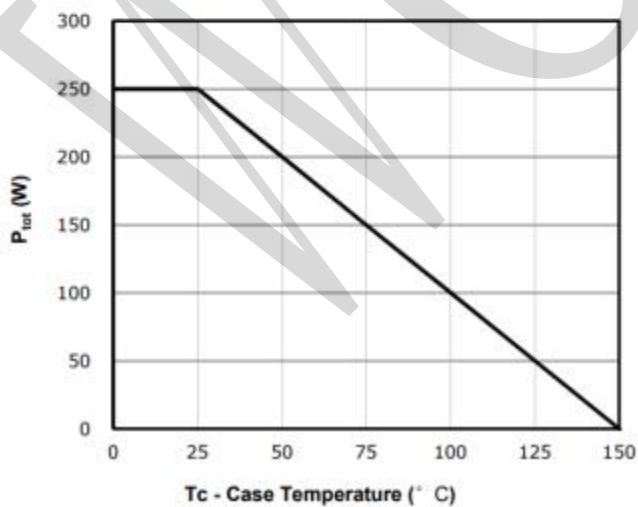
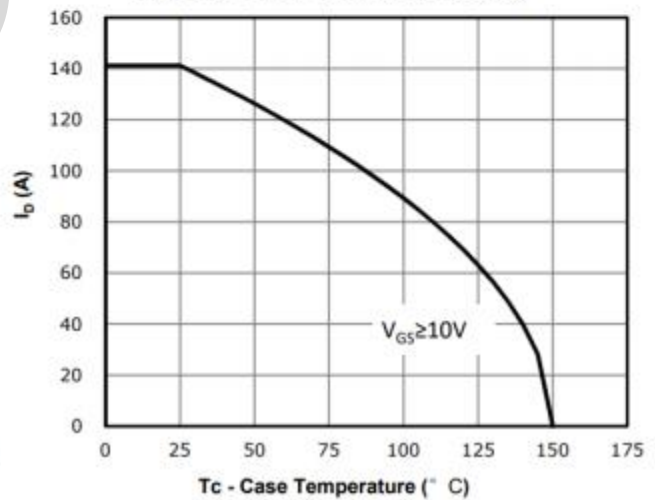


Fig 12: Drain Current Derating



Typical Characteristics

Fig 13: Safe Operating Area

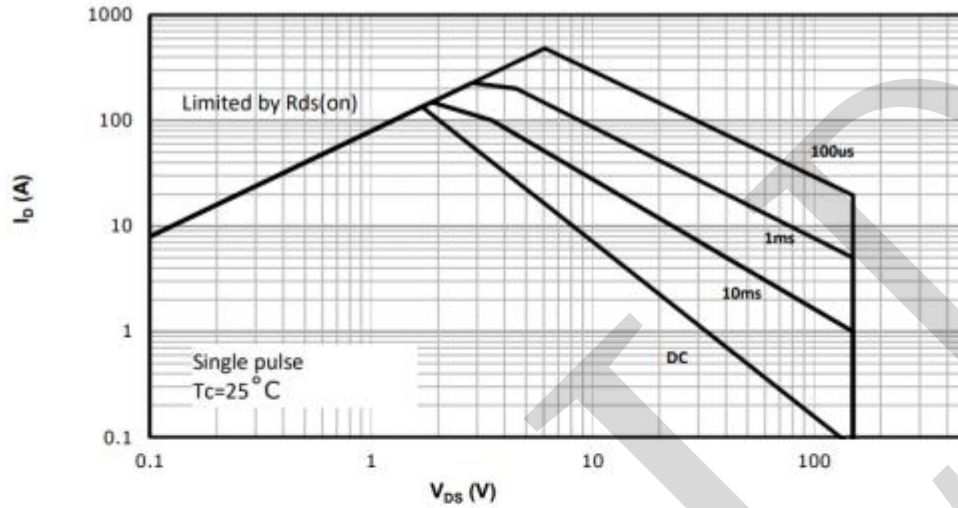
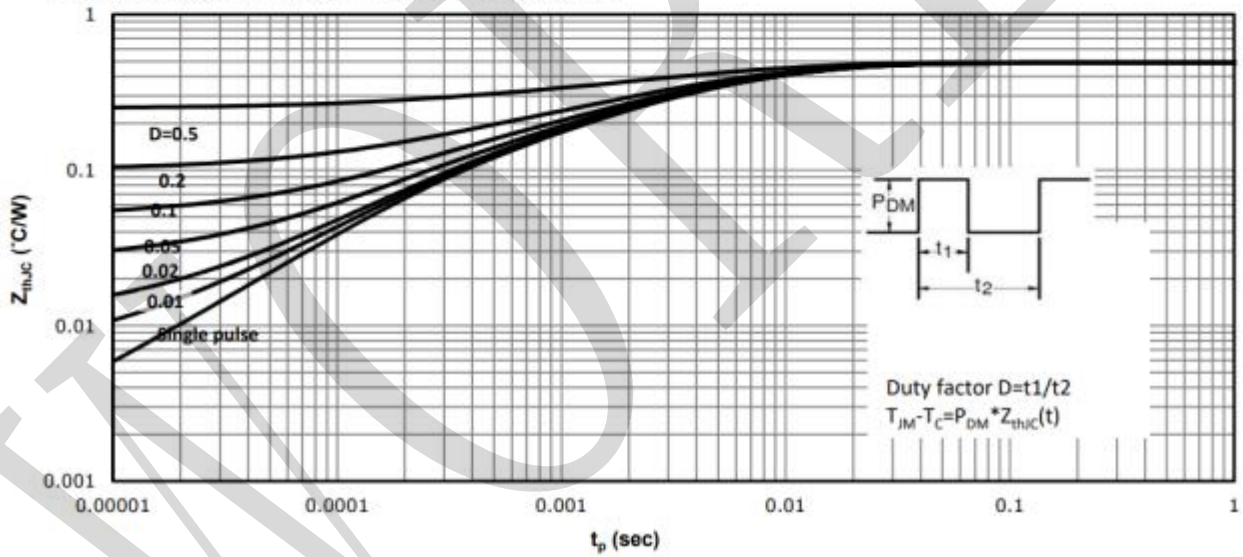


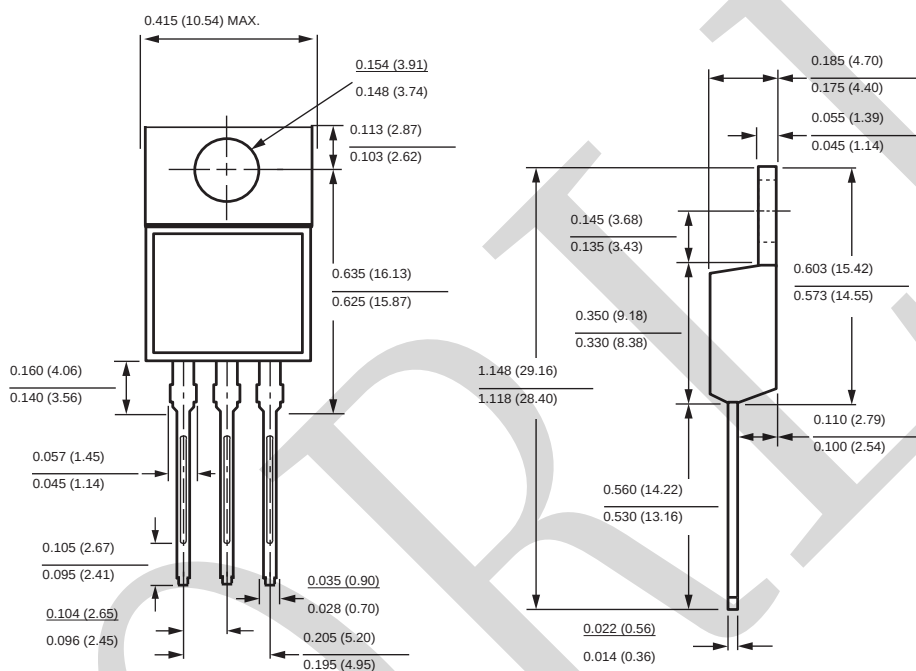
Fig 12: Max. Transient Thermal Impedance



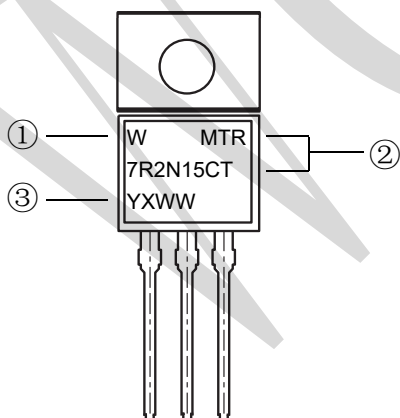
PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220AB



Marking Information



- ① W : Company's trademark
- ② Product model : MTR7R2N15CT
- ③ PDC information :

Y X WW

WW: Week code(01 to 53)

X: Internal identification code

Y: Year code(ex:0=2020)