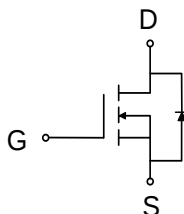


SGT N-Channel Power MOSFET

MTR4R8N10CT

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		100	V
V_{GS}	Gate-Source voltage		± 20	V
I_D	Continuous drain current	$T_C = 25^\circ\text{C}$	130	A
		$T_C = 100^\circ\text{C}$	85	A
I_{DM}	Pulse drain current tested	$T_C = 25^\circ\text{C}$	480	A
EAS	Avalanche energy, single pulsed ①		430	mJ
P_D	Maximum power dissipation	$T_C = 25^\circ\text{C}$	178	W
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to 150	$^\circ\text{C}$

NOTE: ① EAS Condition: $L=0.3\text{mH}$, $R_g=25\Omega$, $V_{DS}=50\text{V}$, Start $T_J=25^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	0.72	°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	3	4	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =50A	--	4.1	4.8	mΩ
g _{fs}	Transconductance	V _{DS} =5V, I _D =50A	--	125	--	S

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

C _{iss}	Input Capacitance	V _{DS} =45V, V _{GS} =0V, f=1MHz	--	4750	--	pF
C _{oss}	Output Capacitance		--	685	--	pF
C _{rss}	Reverse Transfer Capacitance		--	35	--	pF
Q _g	Total Gate Charge	V _{DS} =45V, I _D =25A, V _{GS} =10V	--	78	--	nC
Q _{gs}	Gate-Source Charge		--	23	--	nC
Q _{gd}	Gate-Drain Charge		--	26	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V _{DS} =45V V _{GS} =10V R _L =3Ω	--	14	--	ns
Tr	Turn-on Rise Time		--	12	--	ns
Td(off)	Turn-Off Delay Time		--	32	--	ns
Tf	Turn-Off Fall Time		--	11	--	ns

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

VSD	Forward on voltage	I _S =50A, V _{GS} =0V	--	--	1.2	V
trr	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=500A/μs	--	61	--	ns
Qrr	Body Diode Reverse Recovery Charge	I _F =20A, dI/dt=500A/μs	--	550	--	nC

Typical Characteristics

Fig 1: Output Characteristics

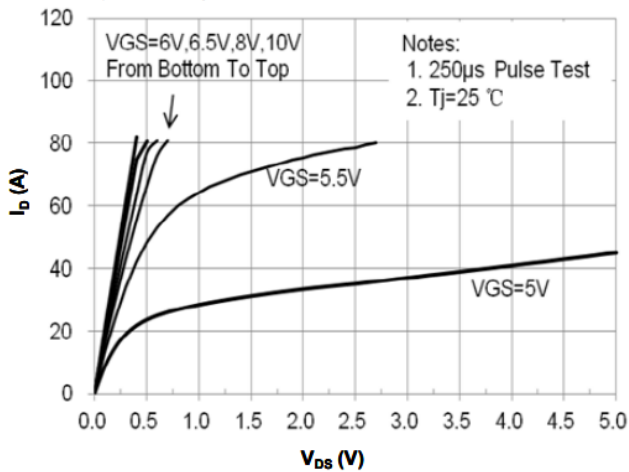


Fig 2: Transfer Characteristics

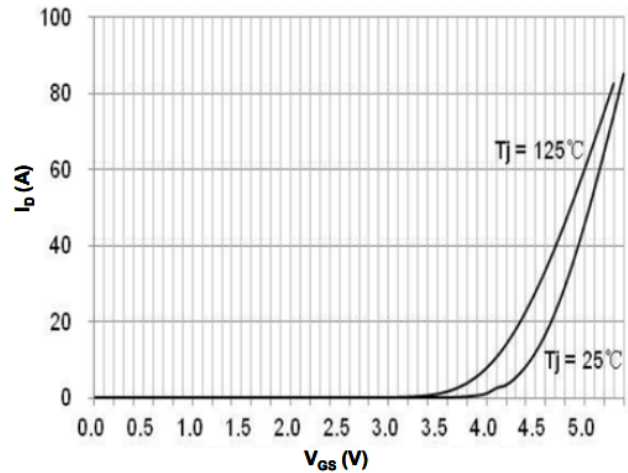


Fig 3: $R_{DS(on)}$ Vs I_{DS} Characteristics ($T_c = 25^\circ\text{C}$)

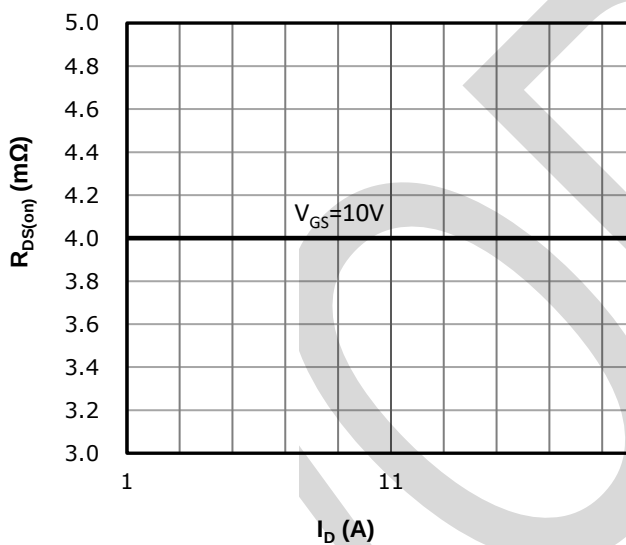


Fig 4: $R_{DS(on)}$ vs Gate Voltage

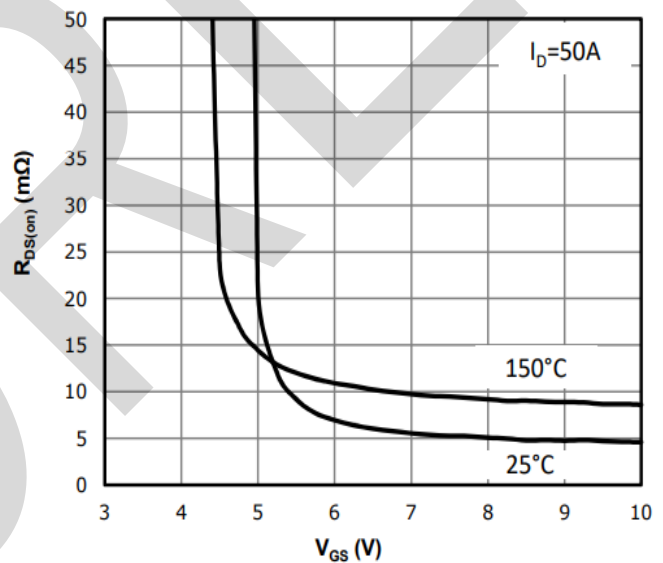


Fig 5: $R_{DS(on)}$ vs. Temperature

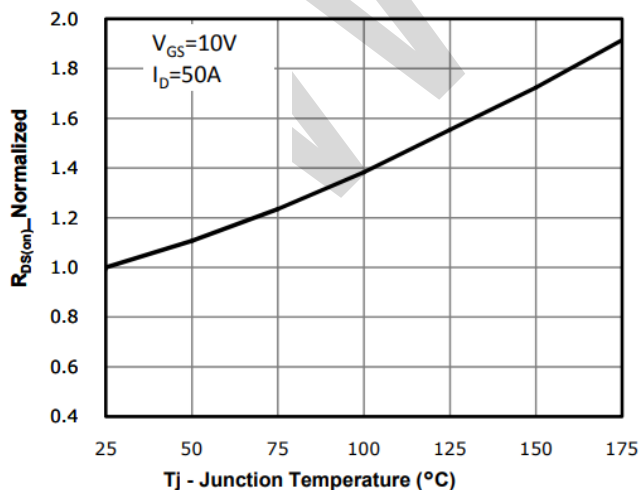
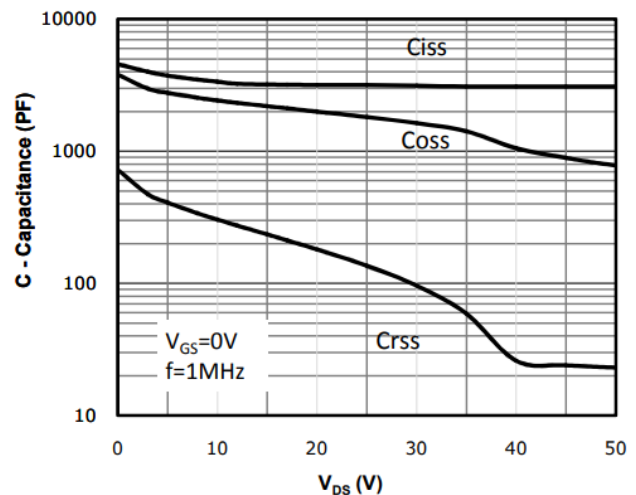


Fig 6: Capacitance Characteristics



Typical Characteristics

Fig 7: Gate Charge Characteristics

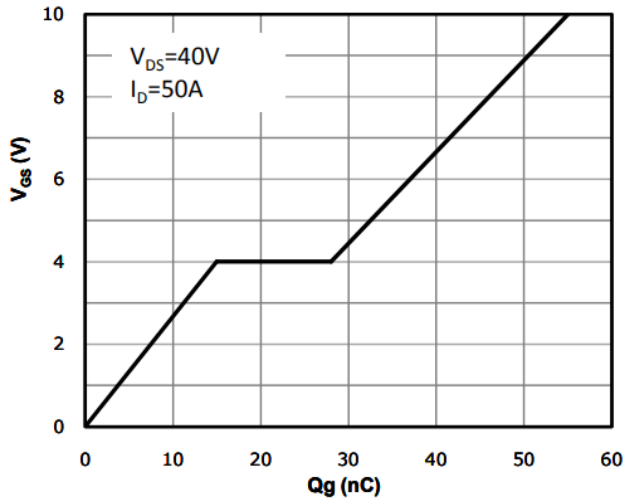


Fig 8: Body-diode Forward Characteristics

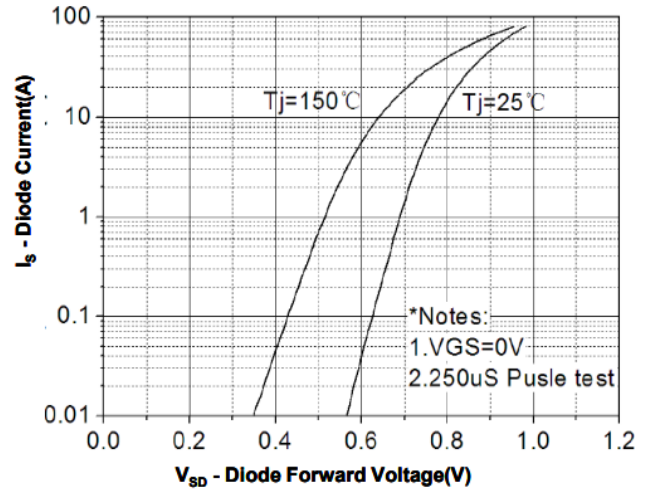


Fig 9 : Power Dissipation

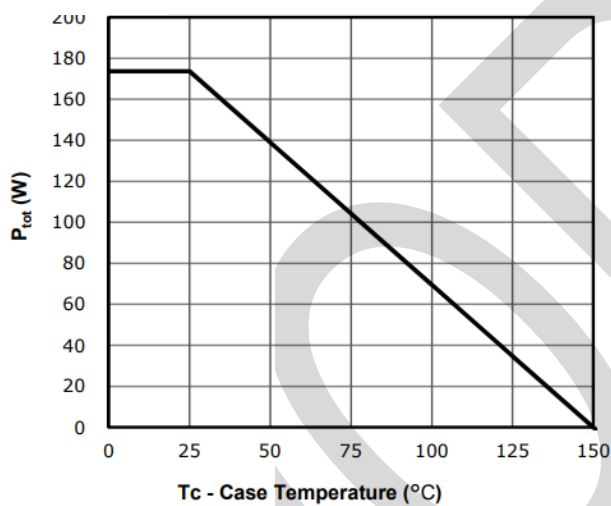


Fig 10 : Drain Current Derating

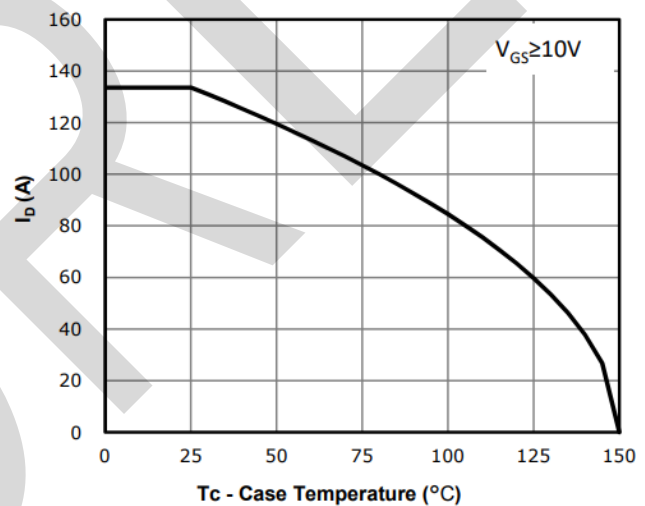
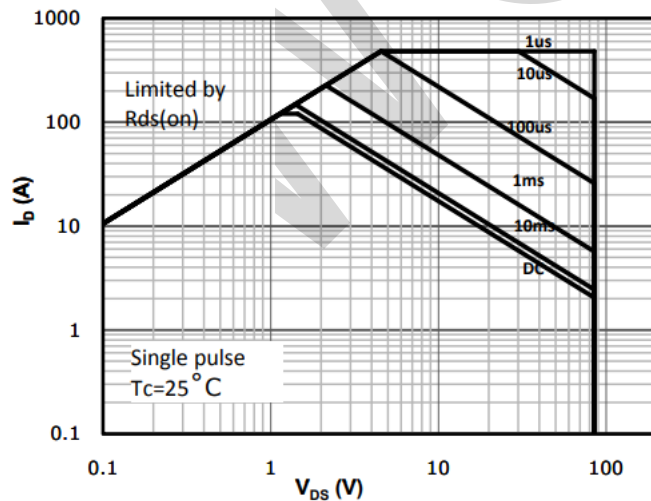
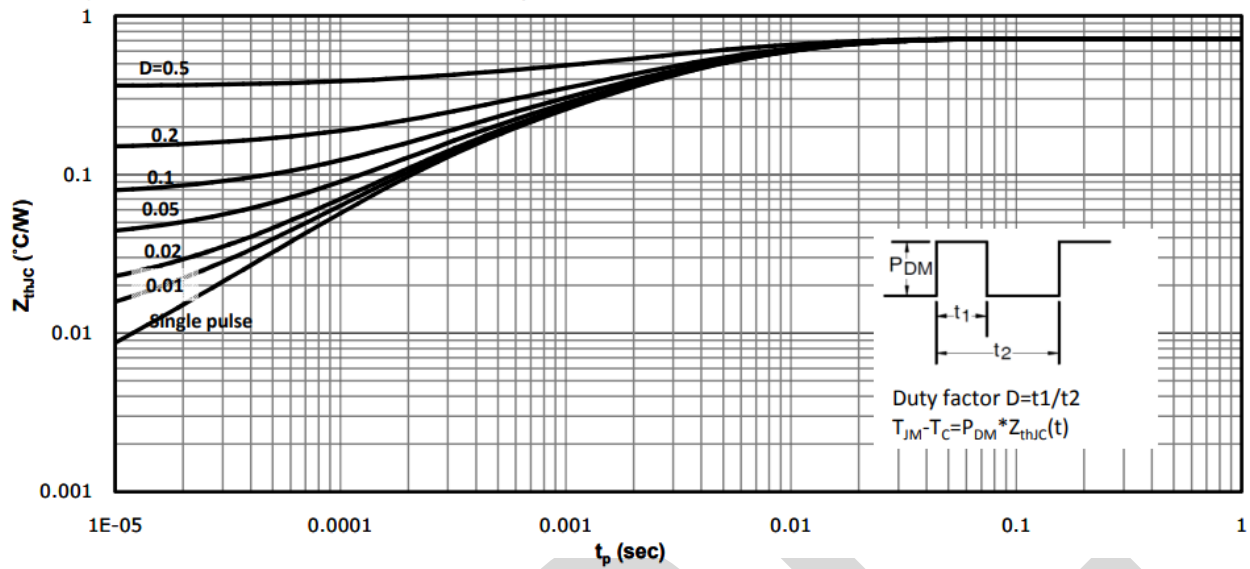


Fig 11: Safe Operating Area



Typical Characteristics

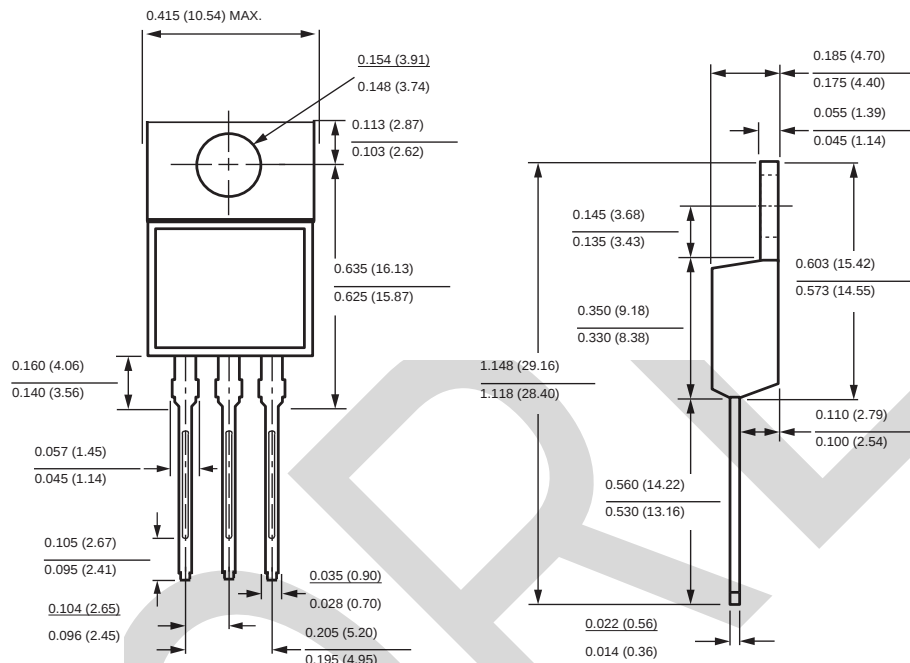
Fig 12: Max. Transient Thermal Impedance



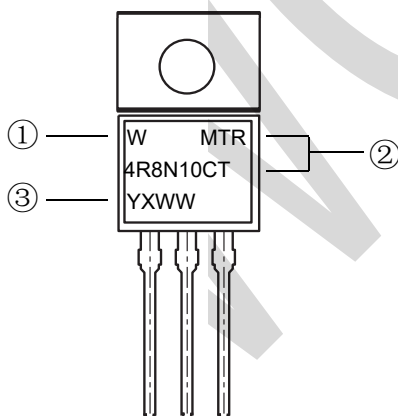
PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220AB



Marking Information



- ①W : Company's trademark
- ②Product model : MTR4R8N10CT
- ③PDC information :

Y X WW

- WW:Week code(01 to 53)
- X:Internal identification code
- Y:Year code(ex:0=2020)