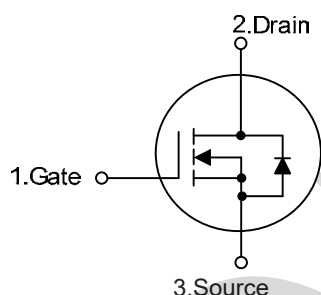


Trench N-channel Power MOSFET

MTR010N10CT

TO-220AB



V_{DS}	100	V
$R_{DS(on),TYP@ V_{GS}=10 V}$	8.8	m Ω
I_D	76	A

Features

- 1、Low on – resistance
- 2、Package TO-220
- 3、TrenchFET Power MOSFET

Applications

- 1、Load Switch for Portable Devices
- 2、Synchronous Rectification for AC-DC Quick Charger
- 3、Power management

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	$T_C = 25^\circ\text{C}$	76	A
		$T_C = 100^\circ\text{C}$	48	A
I_{DM}	Pulse drain current tested (Note1)	$T_C = 25^\circ\text{C}$	130	A
E_{AS}	Avalanche energy, single pulsed (Note2)		71	mJ
P_D	Maximum power dissipation	$T_C = 25^\circ\text{C}$	104	W
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	1.2	°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, T _j =25°C	--	--	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	1.0	1.8	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance (Note3)	V _{GS} =10V, I _D =10A	--	--	10.0	mΩ
		V _{GS} =4.5V, I _D =10A	--	--	14.0	mΩ

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

C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1.0MHz	--	1700	--	pF
C _{oss}	Output Capacitance		--	420	--	pF
C _{rss}	Reverse Transfer Capacitance		--	7.5	--	pF
Q _g	Total Gate Charge	V _{GS} =10V, V _{DD} =50V, I _D =20A	--	30	--	nC
Q _{gs}	Gate-Source Charge		--	3	--	nC
Q _{gd}	Gate-Drain Charge		--	14	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	$V_{DD}=50V,$ $R_D=5\Omega,$ $R_G=10\Omega,$ $V_{GS}=10V$	--	9	--	ns
Tr	Turn-on Rise Time		--	4	--	ns
Td(off)	Turn-Off Delay Time		--	24	--	ns
Tf	Turn-Off Fall Time		--	4	--	ns

NOTE: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition : $L=0.5mH, R_g=25\Omega$, starting $T_J=25^\circ C$.

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

NO COPY

Typical Characteristics

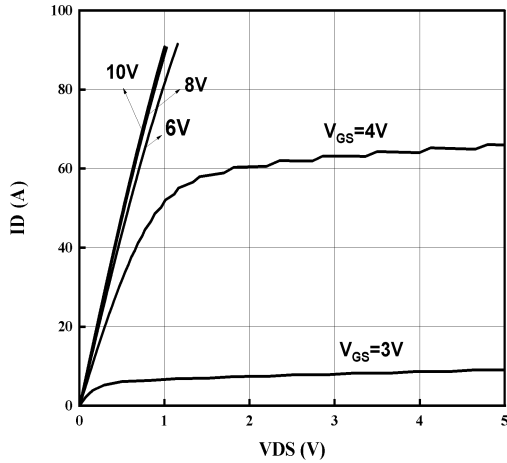


Fig1. Typical Output Characteristics

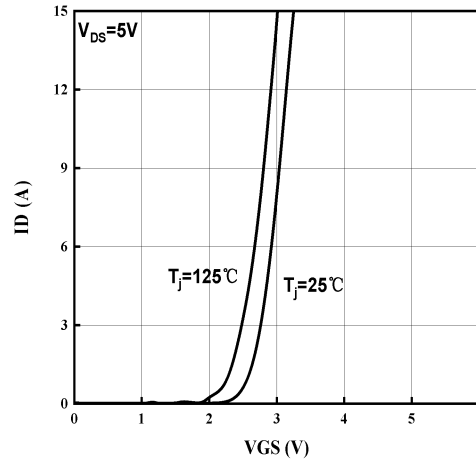


Fig2. Typical Transfer Characteristics

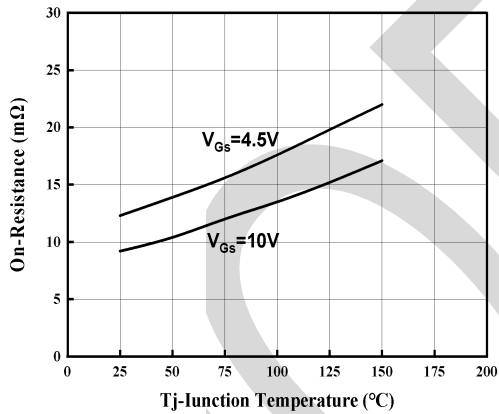


Fig3. On-Resistance Vs. Temperature

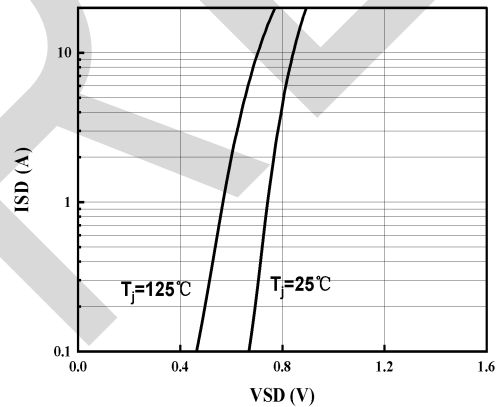


Fig4. Typical Source-Drain Diode Forward Voltage

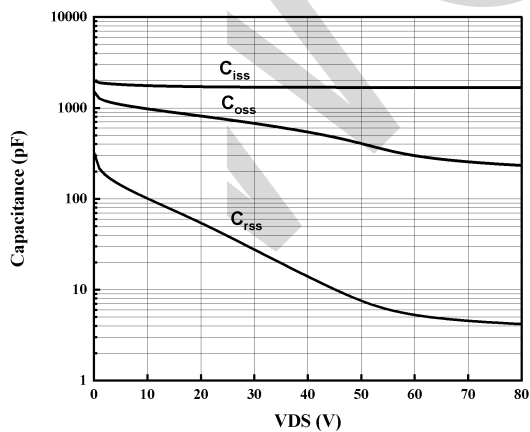


Fig5. Typical Capacitance

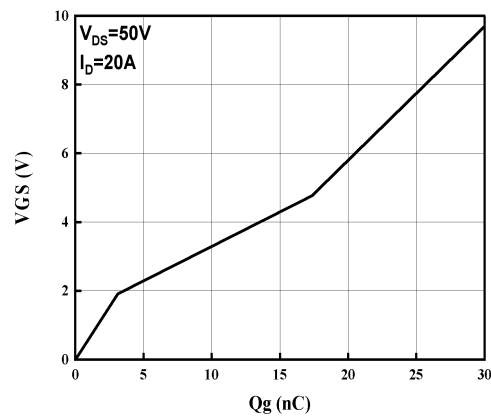


Fig6. Typical Gate Charge

Typical Characteristics

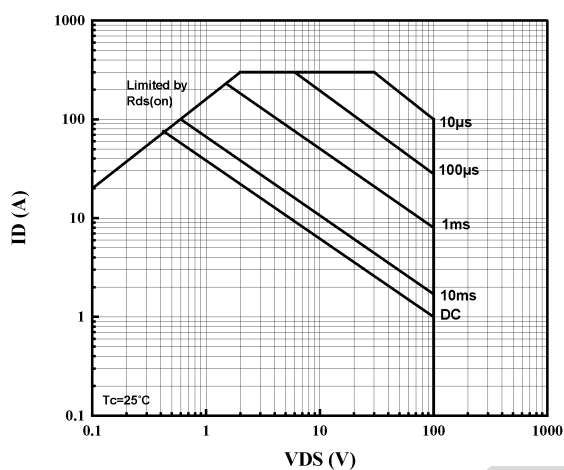


Fig7. Safe Operating Area

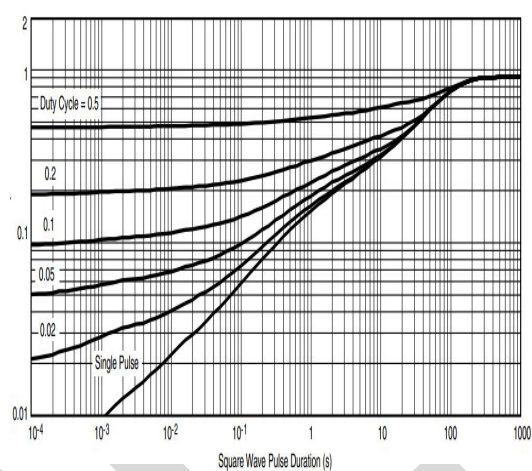


Fig8. Normalized transient thermal impedance

PACKAGE OUTLINE DIMENSIONS

Note:unit mm

TO-220AB

