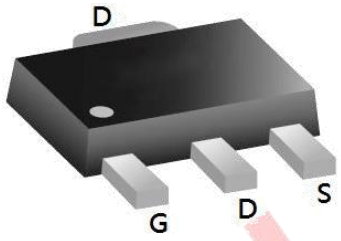
ATM10N10SQ

N-Channel Fast Switching MOSFETs

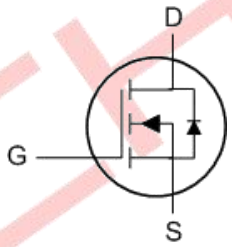
Drain-Source Voltage: 100V ***Drain Current:10A***

Description

SOT-89



The ATM10N10SQ is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small p ower switching and load switch applications.
The ATM10N10SQ meets the RoHS and Green Product requirement with full function reliability approved.



Features

- Green Device Available
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ 10V[1]	I_D@TC=25℃	10	A
Continuous Drain Current, V_{GS} @ 10V[1]	I_D@TC=70℃	7.5	A
Pulsed Drain Current[2]	I_{DM}	25	A
Power Dissipation[3]	P_D@TA=25℃	1.5	W
Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	85	℃/W
Thermal Resistance from Junction to Case[1]	$R_{\theta JC}$	36	℃/W
Junction Temperature	T_J	-55~ +150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

ATM10N10SQ

Electrical characteristics (T_A=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
△BV_{DSS}/△T_J	BVDSS Temperature Coefficient	Reference to 25℃ , ID=1mA	---	0.067	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=8A	---	---	105	mΩ
		V_{GS}=6V , I_D=5A	---	---	145	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.7	2.3	V
△$V_{GS(th)}$	VGS(th) Temperature Coefficient		---	-4.2	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=2A	---	5.4	---	S
Rg	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.8	5.6	
Qg	Total Gate Charge (10V)	V_{DS}=50V , V_{GS}=10V , I_D=2A	---	9.1	12.7	nC
Qgs	Gate-Source Charge		---	2	2.8	
Qgd	Gate-Drain Charge		---	1.4	2.0	
Td(on)	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=3.3Ω， I_D=2A	---	2	---	ns
Tr	Rise Time		---	21.6	---	
Td(off)	Turn-Off Delay Time		---	11.2	---	
Tf	Fall Time		---	18.8	---	
Ciss	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	182	---	pF
Coss	Output Capacitance		---	30	---	
Crss	Reverse Transfer Capacitance		---	3.6	---	

Diode characteristics

Symbol	Para meter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	10	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V
trr	Reverse Recovery Time	IF=2A,dI/dt=100A/us,T_J=25℃	---	17.5	---	nS
Qrr	Reverse Recovery Charge		---	14	---	nC

Note:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The power dissipation is limited by 150℃ junction temperature
4. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics Cures

Typical Characteristics

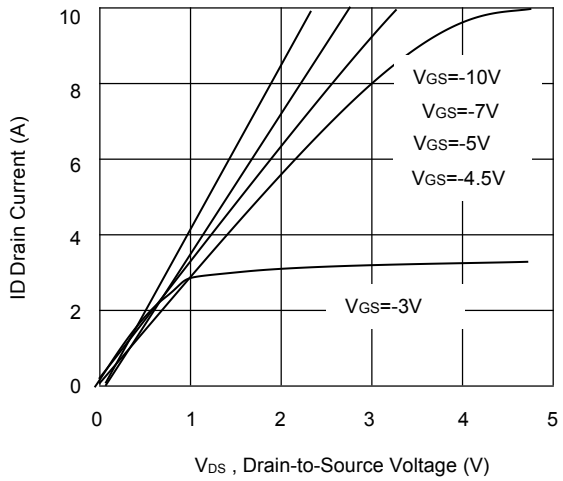


Fig.1 Typical Output Characteristics

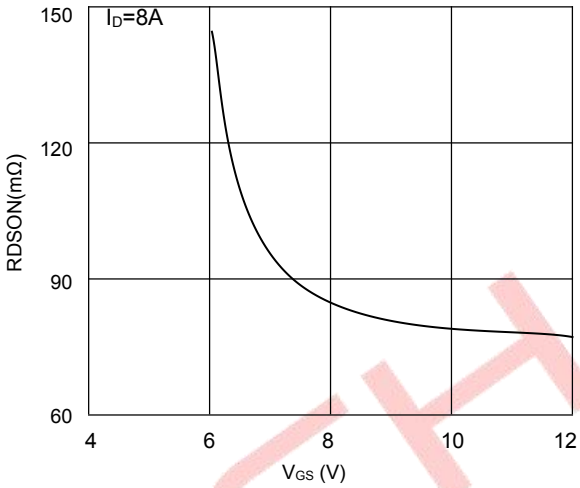


Fig.2 On-Resistance vs. Gate-Source

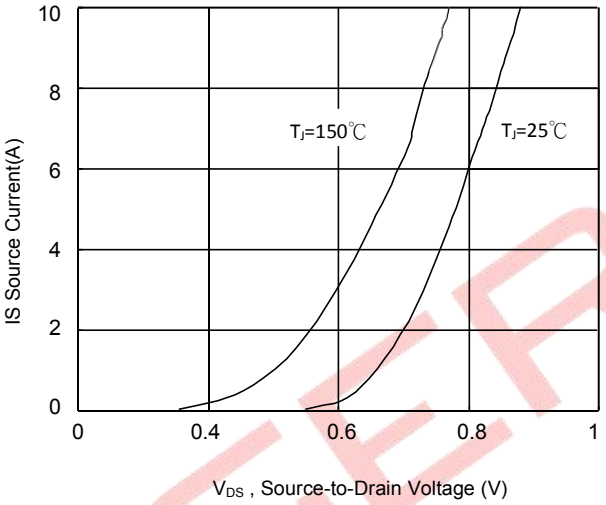


Fig.3 Forward Characteristics of Reverse

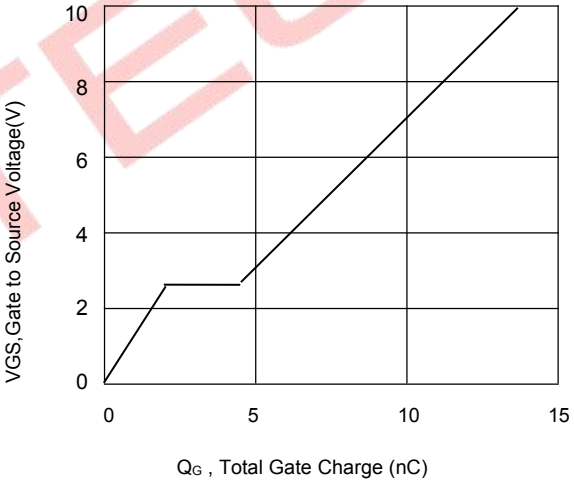


Fig.4 Gate-Charge Characteristics

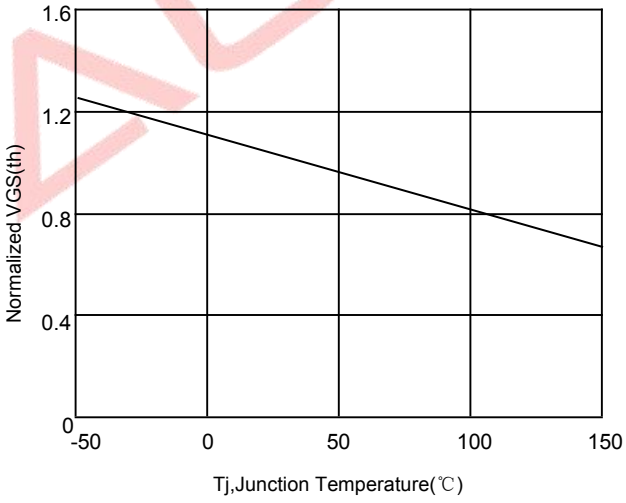


Fig.5 Normalized VGS(th) vs. TJ

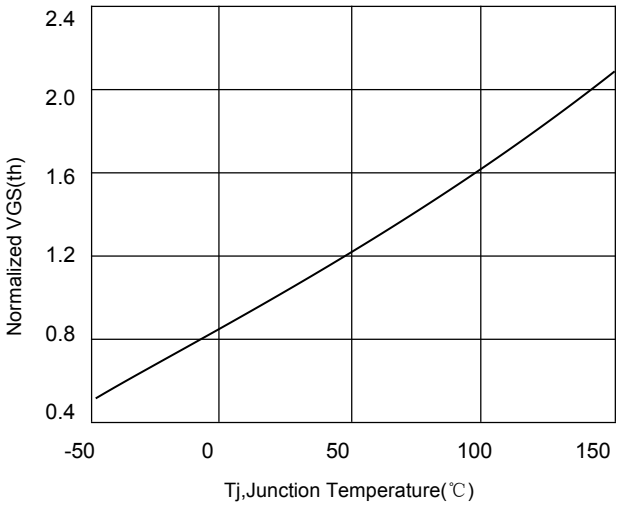


Fig.6 Normalized R_{DSON} vs. T_J

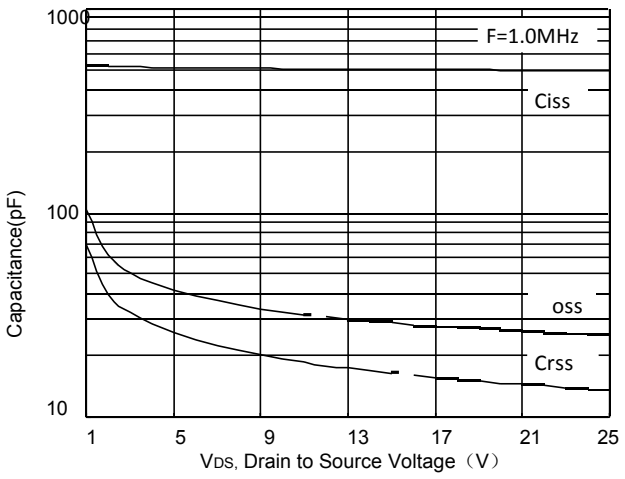


Fig.7 Capacitance

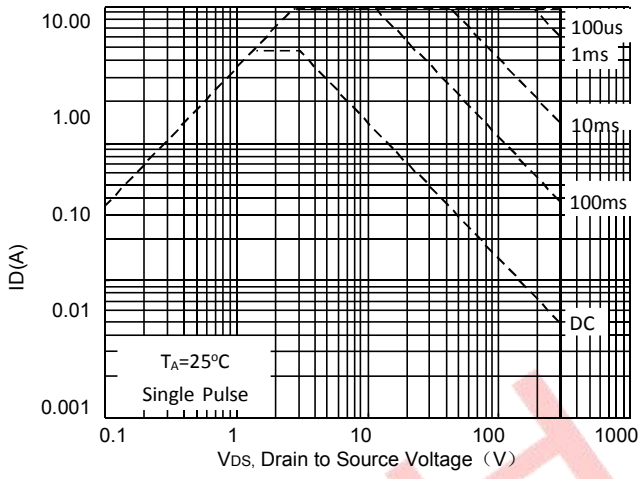


Fig.8 Safe Operating Area

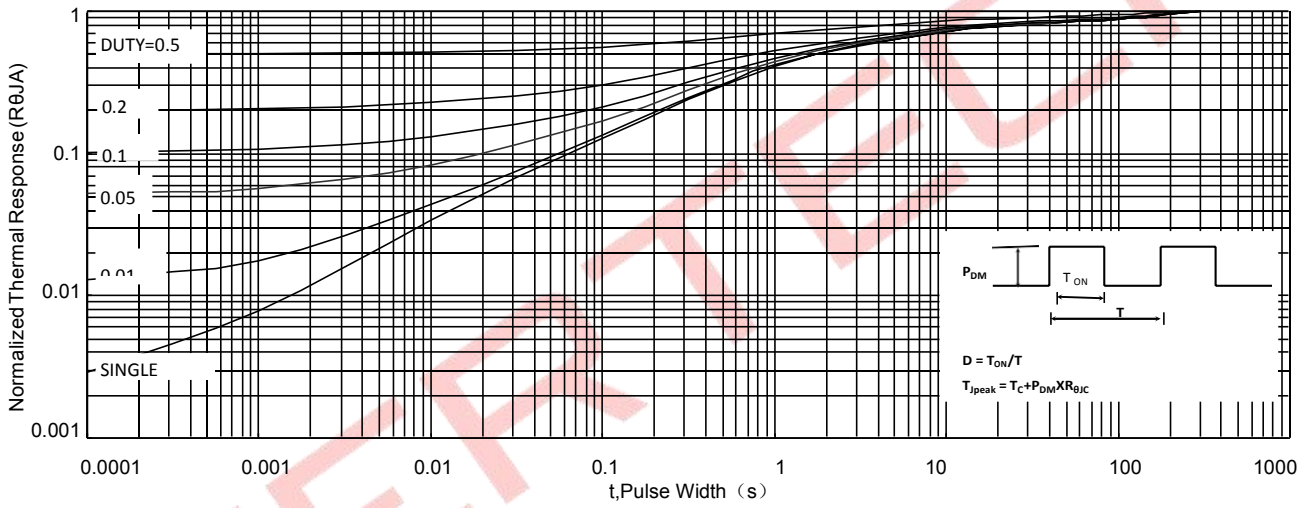


Fig.9 Normalized Maximum Transient Thermal Impedance

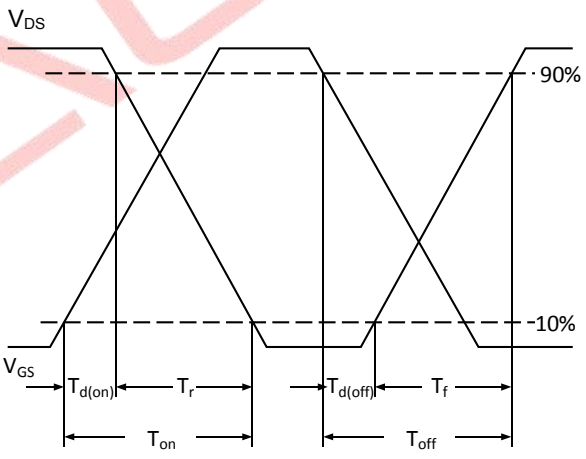


Fig.10 Switching Time Waveform

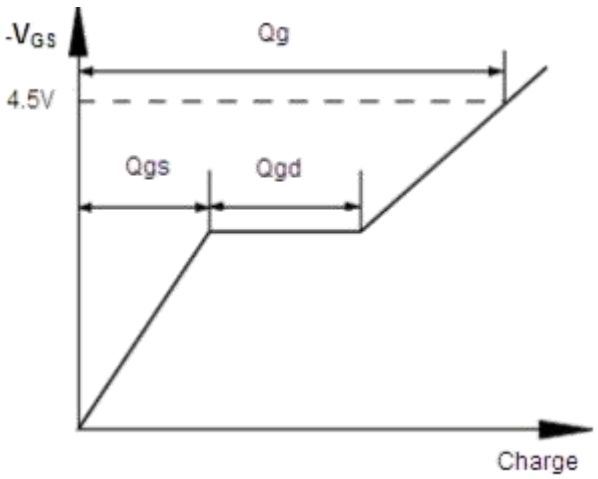


Fig.11 Gate Charge Waveform