P-Ch 100V Fast Switching MOSFETs

★ Super Low Gate Charge
★ 100% EAS Guaranteed
★ Green Device Available
★ Excellent CdV/dt effect decline
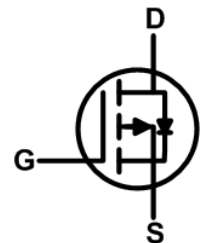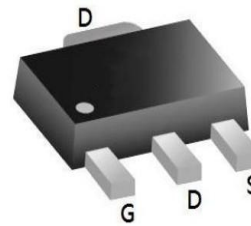★ Advanced high cell density Trench technology

Product Summary

BVDSS	RDSON	ID
-100V	185mΩ	-10A

SOT89-3L Pin Configuration

Description

The XXW10P10Q is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The XXW10P10Q meet the RoHS and Green Product requirement with full function reliability approved.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ -10V[1]	-10	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ -10V[1]	-4	A
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ -10V[1]	-2.5	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ -10V[1]	-2.0	A
I_{DM}	Pulsed Drain Current[2]	-20	A
EAS	Single Pulse Avalanche Energy[3]	---	mJ
I_{AS}	Avalanche Current	---	A
P_D@T_C=25°C	Total Power Dissipation[4]	2.4	W
P_D@T_A=25°C	Total Power Dissipation[4]	1	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	69.4	°C/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	---	8	°C/W

P-Channel Electrical Characteristics (T$_J$=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
R$_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V$_{GS}$=-10V , I$_D$=-3A	---	185	240	mΩ
		V$_{GS}$=-4.5V , I$_D$=-2A	---	208	270	
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$ =-250uA	-1.2	-2	-2.3	V
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=-100V , V$_{GS}$=0V , T$_J$=25℃	---	---	-1	uA
		V$_{DS}$=-100V , V$_{GS}$=0V , T$_J$=85℃	---	---	-30	
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±20V , V$_{DS}$=0V	---	---	±100	nA
R$_g$	Gate Resistance	V$_{DS}$=0V , V$_{GS}$=0V , f=1MHz	---	---	---	Ω
Q$_g$	Total Gate Charge (-10V)	V$_{DS}$=-50V , V$_{GS}$=-10V , I$_D$=-2A	---	29	---	nC
Q$_{gs}$	Gate-Source Charge		---	2.9	---	
Q$_{gd}$	Gate-Drain Charge		---	5.2	---	
T$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=-50V , V$_{GS}$=-10V , R$_G$=3.3Ω, I$_D$=-2A	---	9.6	---	ns
T$_r$	Rise Time		---	17	---	
T$_{d(off)}$	Turn-Off Delay Time		---	60	---	
T$_f$	Fall Time		---	36	---	
C$_{iss}$	Input Capacitance	V$_{DS}$=-50V , V$_{GS}$=0V , f=1MHz	---	1290	---	pF
C$_{oss}$	Output Capacitance		---	34	---	
C$_{rss}$	Reverse Transfer Capacitance		---	28	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I$_S$	Continuous Source Current[1,5]	V$_G$=V$_D$=0V , Force Current	---	---	10.0	A
V$_{SD}$	Diode Forward Voltage[2]	V$_{GS}$=0V , I$_S$=-1A , T$_J$=25℃	---	---	-1.2	V

Note :

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The da ta 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.
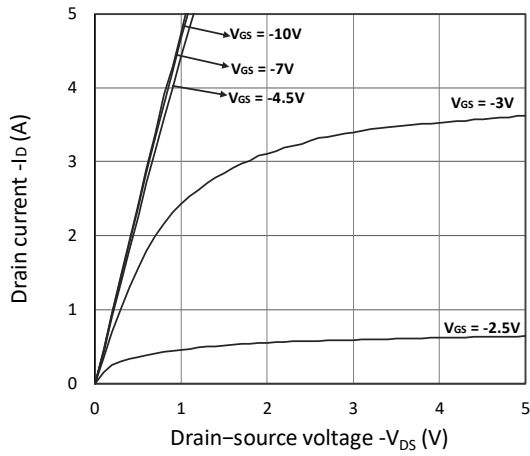
Typical Characteristics
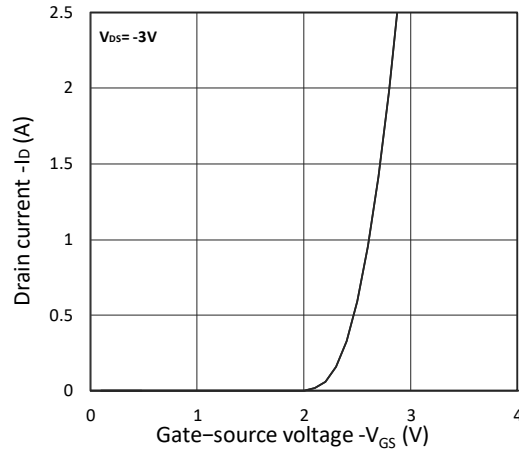

Figure 1. Output Characteristics
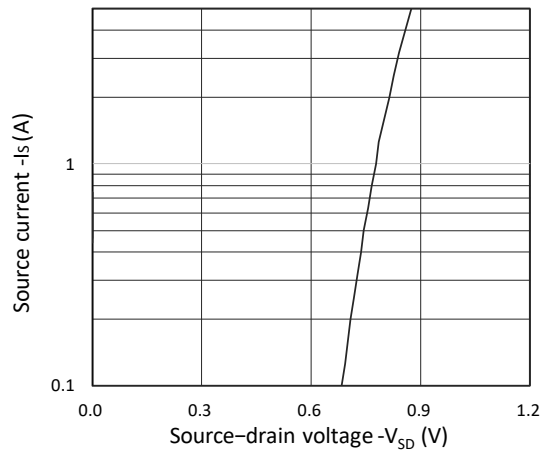

Figure 2. Transfer Characteristics

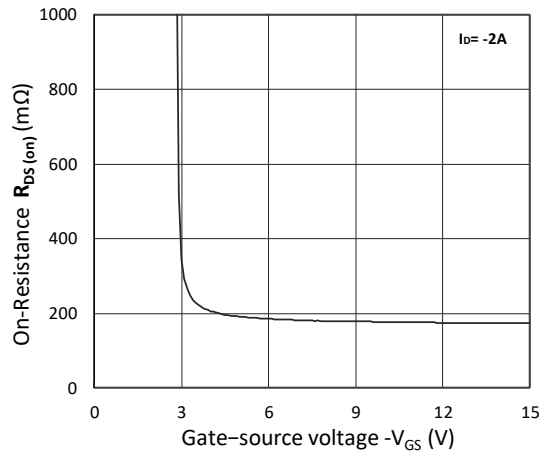Figure 3. Forward Characteristics of Reverse
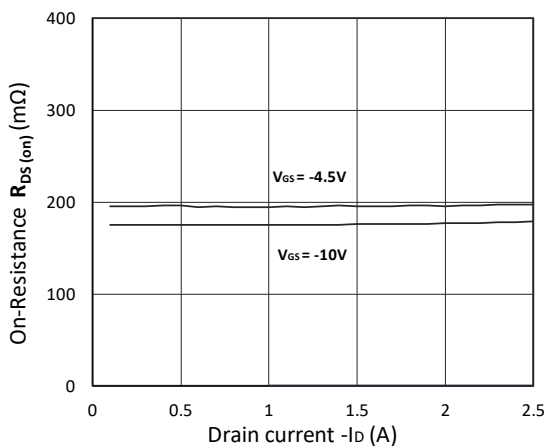

Figure 4. $R_{DS(ON)}$ vs. V_{GS}
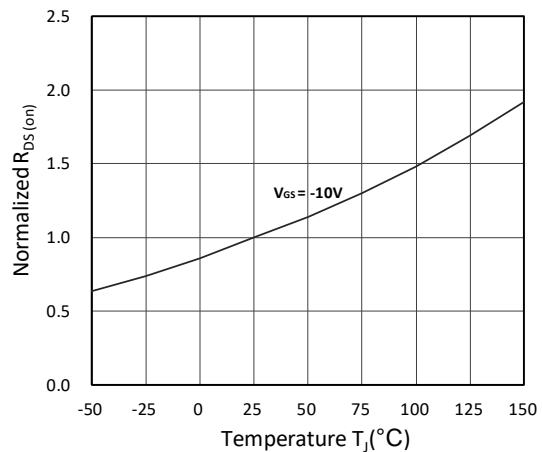

Figure 5. $R_{DS(ON)}$ vs. I_D
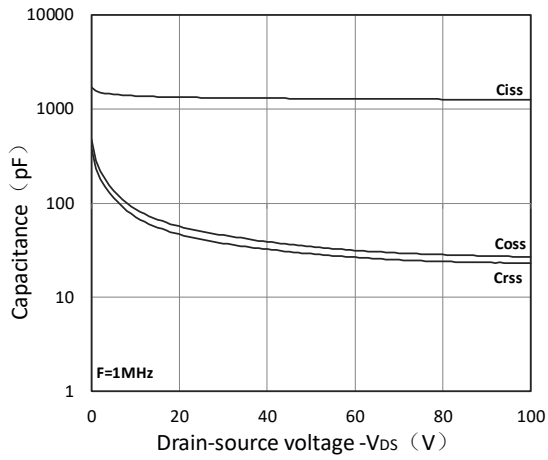

Figure 6. Normalized $R_{DS(on)}$ vs. Temperature
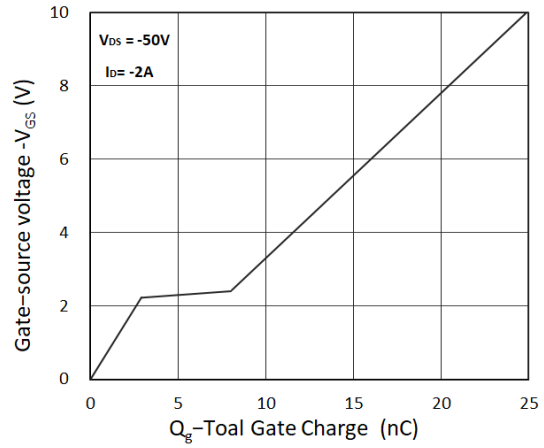
Figure 7. Capacitance Characteristics

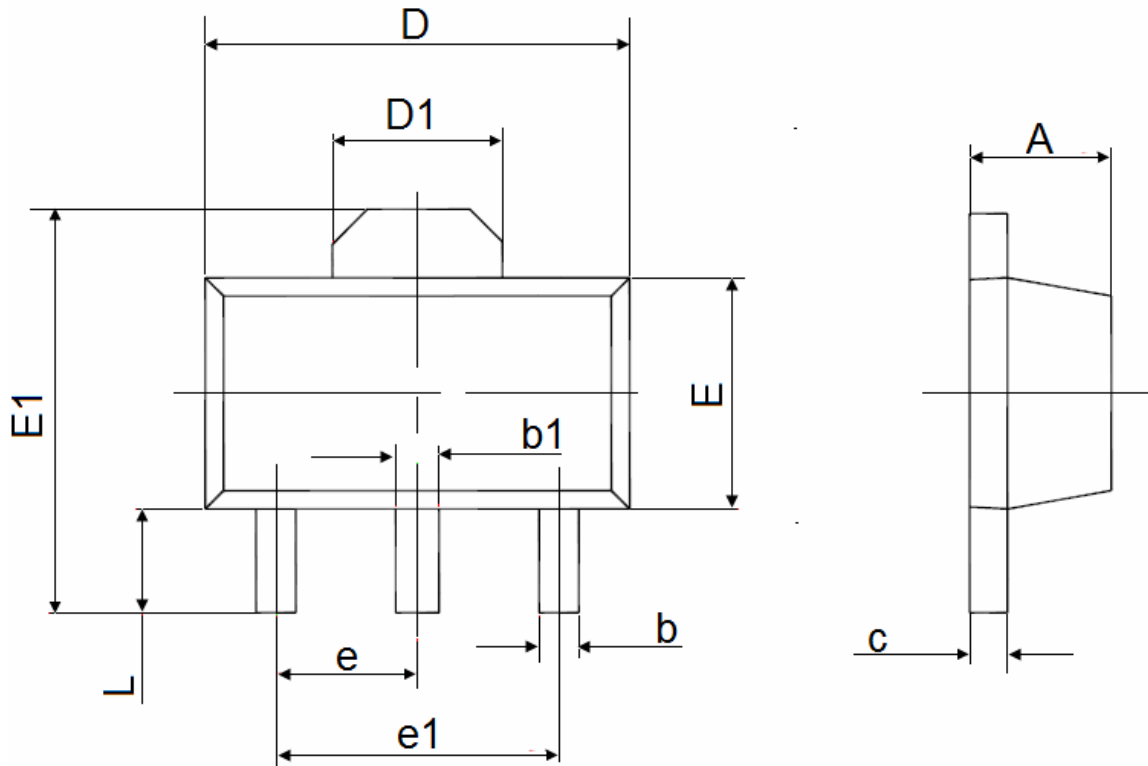Figure 8. Gate Charge Characteristics

SOT-89-3L Package Information

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047