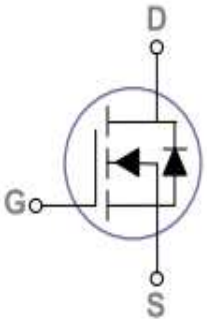
Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

SOT89 Pin Configuration





BVDSS	RDSON	ID
20V	26mΩ	5.6A

Features

- 20V,5.6A,RDS(ON)=26MΩ@VGS=4.5V
- Improved dt/dv capability
- Fast switching
- Green Device Avaliable
- Suit for 1.8V Gate Driver applications

Application

- Notebook
- Load switch
- Hand-held Instruments

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	20	V
VGS	Gate-Source Voltage	± 10	V
ID	Drain Current – Continuous (TC=25℃)	5.6	A
	Drain Current – Continuous (TC=100℃)	3.5	A
IDM	Drain Current – Pulsed [1]	22.4	A
PD	Power Dissipation (TC=25℃)	1.47	W
	Power Dissipation – Derate above 25℃	0.012	W/℃
TSTG	Storage Temperature Range	-55 to 150	℃
TJ	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
RθJA	Thermal Resistance Junction to ambient	---	85	℃/W

Electrical Characteristics T_J=25℃, unless otherwise noted

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---		V
△BV_{DSS}/△T_J	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.02	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=85℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=± 10V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=4A	---	22	26	mΩ
		V_{GS}=2.5V , I_D=3A	---	28	36	
		V_{GS}=1.8V , I_D=2A	---	39	51	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D =250uA	0.4	0.6	1	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-2	---	mV/℃
gfs	Forward tansconductance	V_{DS}=10V, I_S=3A	---	7	---	S

Dynamic and switching Characteristics

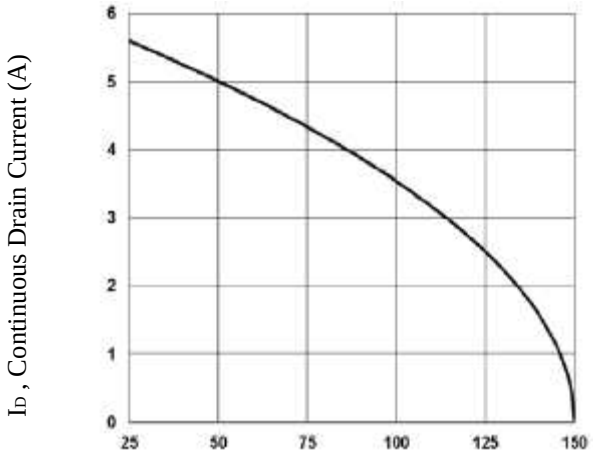
Qg	Total Gate Charge [2,3]	V_{DS}=10V , V_{GS}=4.5V ,I_D=4A	---	7.7	11	nC
Qgs	Gate-Source Charge [2,3]		---	0.9	1	
Qgd	Gate-Drain Charge [2,3]		---	2.4	5	
Td(on)	Turn-On Delay Time [2,3]	V_{DD}=10V ,V_{GS}=4.5V ,R_G=25Ω I_D=1A	---	4.1	8	nS
Tr	Rise Time [2,3]		---	11.6	22	
Td(off)	Turn-Off Delay Time [2,3]		---	23.9	45	
Tf	Fall Time [2,3]		---	7.6	14	
Ciss	Input Capacitance	V_{DS}=10V , V_{GS}=0V , F=1MHz	---	535	775	pF
Coss	Output Capacitance		---	60	85	
Crss	Reverse Transfer Capacitance		---	34	50	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	parameter	conditions	Min	Typ	Max	Uuit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	5.6	A
I_{SM}	Pulsed Source Current		---	---	22.4	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V

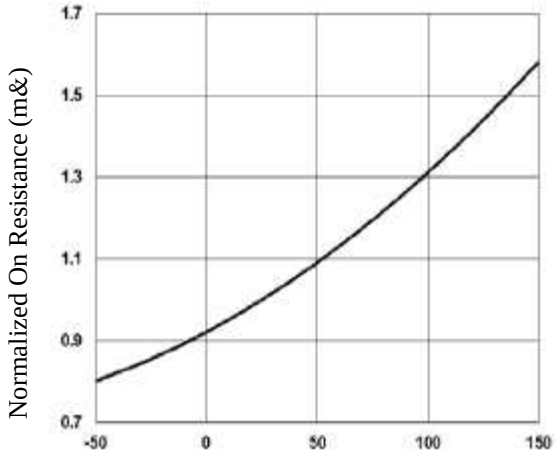
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.



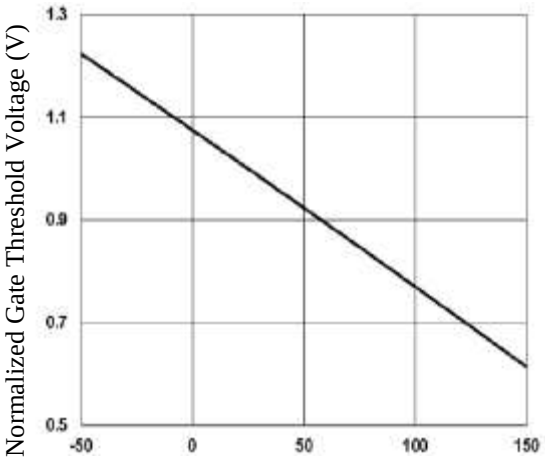
TC , Case Temperature (℃)

Fig.1 Continuous Drain Current vs. TC



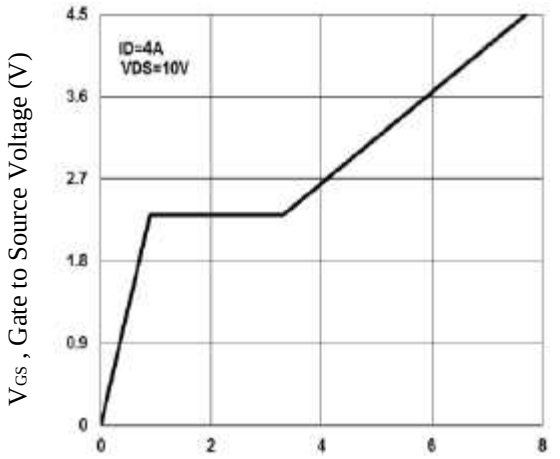
TJ , Junction Temperature (℃)

Fig.2 Normalized RDSON vs. TJ



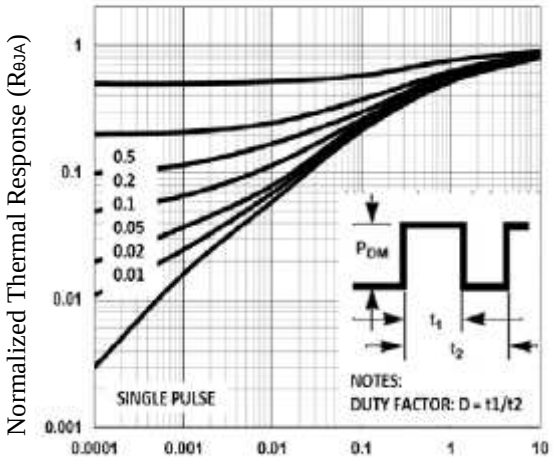
TJ , Junction Temperature (℃)

Fig.3 Normalized Vth vs. TJ



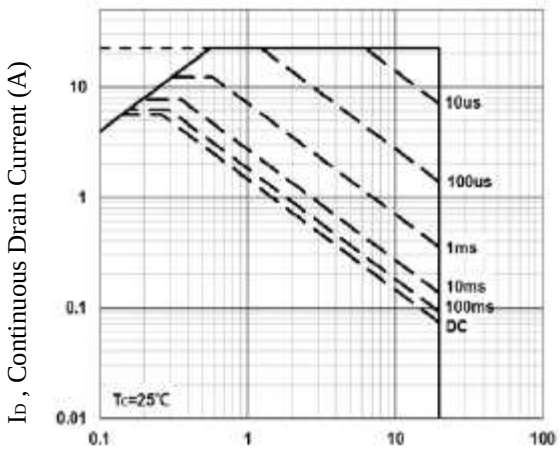
Qg , Gate Charge (nC)

Fig.4 Gate Charge Waveform



Square Wave Pulse Duration (s)

Fig.5 Normalized Transient Impedance



VDS , Drain to Source Voltage (V)

Fig.6 Maximum Safe Operation Area

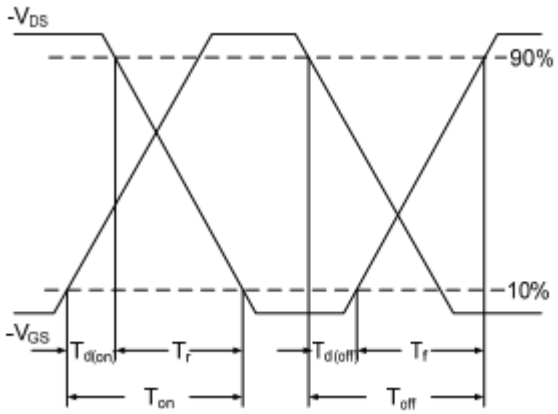


Fig.7 Switching Time Waveform

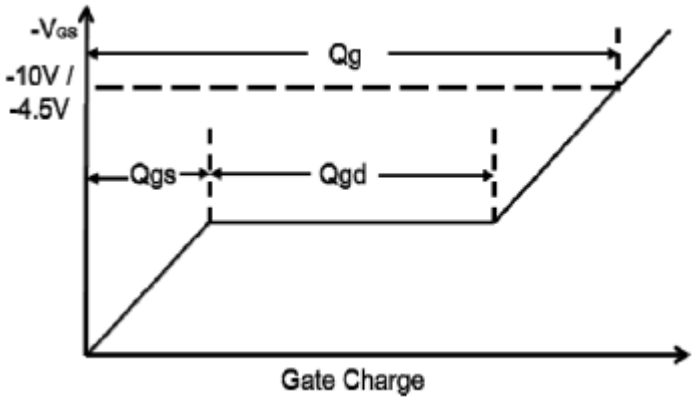
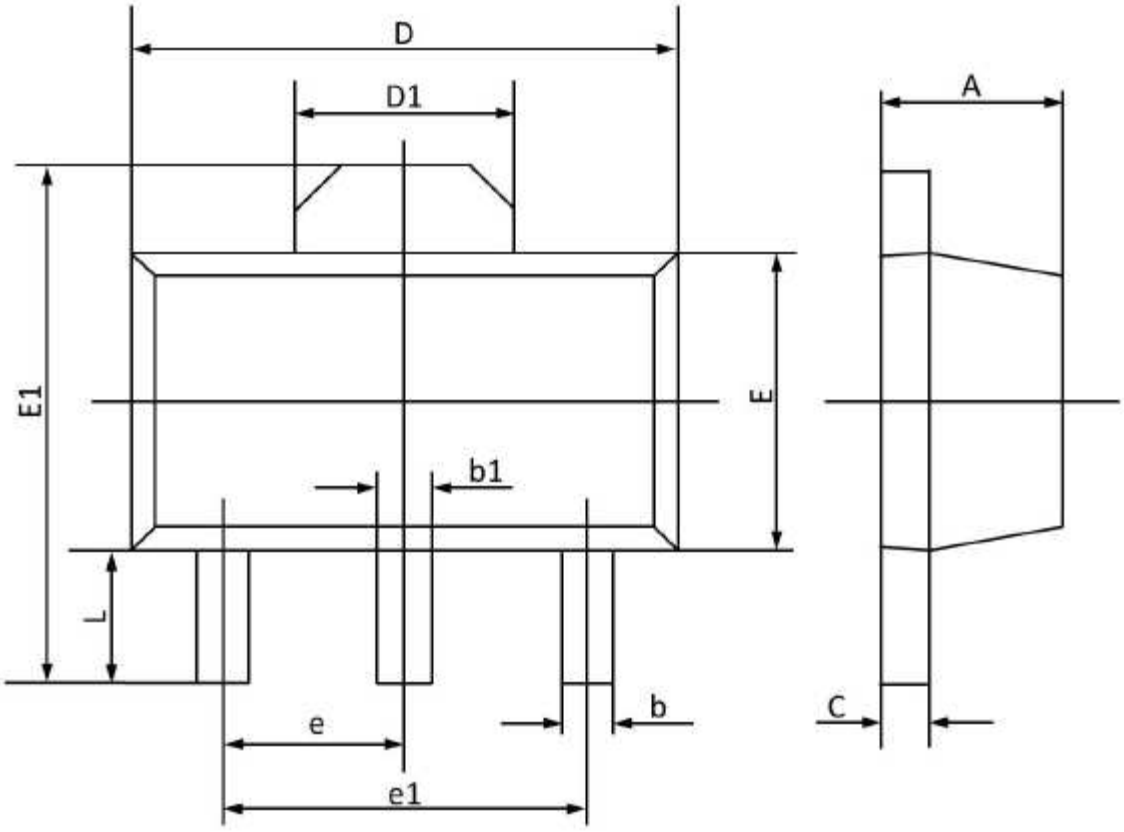


Fig.8 Gate Charge Waveform

SOT89 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