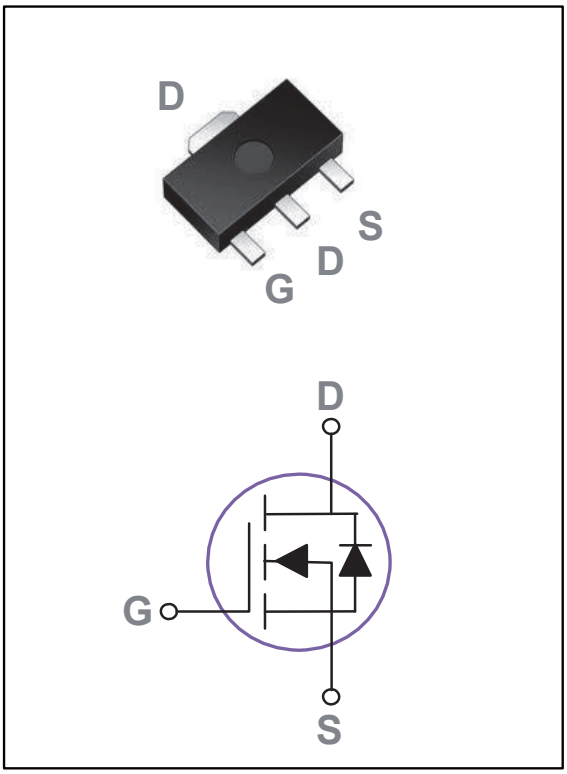
HFZT

LDK0954

SOT-89 Plastic-Encapsulate Transistors

BVDSS	RDSON	ID
100V	350mΩ	3A



Features

- *100V,3A , RDS(ON)=350mΩ@VGS=10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

Applications

- *Networking*
- *Load Switch*
- *LED applications*

MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous (T_C=25℃)	I_D	3	A
Drain Current – Continuous (T_C=100℃)		1.9	A
Drain Current – Pulsed[1]	I_{DM}	12	A
Single Pulse Avalanche Energy[2]	EAS	6	mJ
Single Pulse Avalanched Current[2]	IAS	11	A
Power Dissipation (T_C=25℃)	P_D	6.9	W
Power Dissipation – Derate above 25℃		0.06	W/℃
Storage Temperature Range	T_{STG}	-50 to 150	℃
Operating Junction Temperature Range	T_J	-50 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	80	℃/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	18	℃/W

MOSFET ELECTRICAL CHARACTERISTICS T_A=25℃ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	100	---	---	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25℃ , I_D=1mA	---	0.09	---	V/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=125℃	---	---	10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=2A	---	280	350	mΩ
		V_{GS}=4.5V , I_D=1A	---	290	360	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1.2	1.8	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		---	-4.4	---	mV/℃
Forward Transconductance	gfs	V_{DS}=10V , I_D=2A	---	3	---	S

Dynamic and switching Characteristics

Total Gate Charge[3,4]	Q_g	V_{DS}=50V , V_{GS}=10V , I_D=1A	---	5.8	11	nC
Gate-Source Charge[3,4]	Q_{gs}		---	0.7	3	
Gate-Drain Charge[3,4]	Q_{gd}		---	2.5	5	
Turn-On Delay Time[3,4]	$T_{d(on)}$	V_{DD}=50V , V_{GS}=10V , R_G=3.3Ω I_D=1A	---	5.2	10	ns
Rise Time[3,4]	T_r		---	6.8	12	
Turn-Off Delay Time[3,4]	$T_{d(off)}$		---	14.5	28	
Fall Time[3,4]	T_f		---	2.1	5	
Input Capacitance	C_{iss}	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	480	960	pF
Output Capacitance	C_{oss}		---	25	50	
Reverse Transfer Capacitance	C_{rss}		---	14	28	
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	2	4	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	V_G=V_D=0V , Force Current	---	---	3	A
Pulsed Source Current	I_{SM}		---	---	6	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_S=1A , di/dt=100A/μs T_J=25℃	---	70	---	ns
Reverse Recovery Charge	Q_{rr}		---	114	---	nC

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V,V_{GS}=10V,L=0.1mH,I_{AS}=11A.,R_G=25Ω,Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

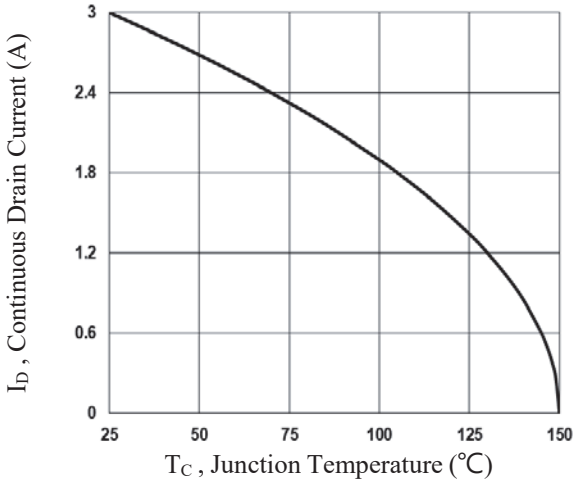


Fig.1 Continuous Drain Current vs. T_C

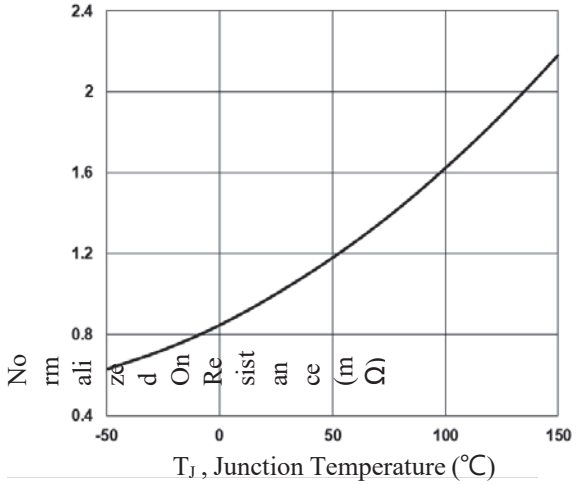
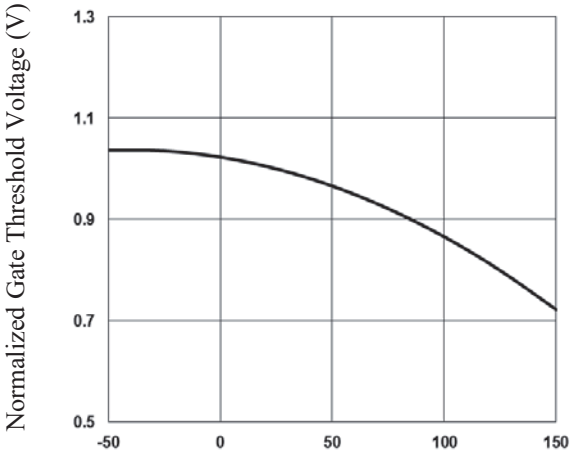


Fig.2 Normalized RDSON vs. T_J



(℃) Fig.3 Normalized V_{th} vs. T_J

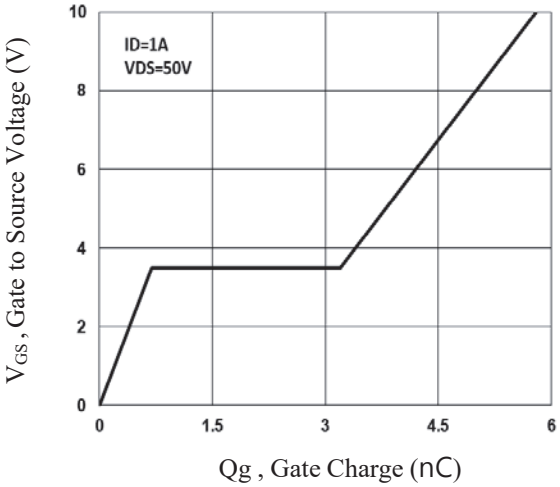


Fig.4 Gate Charge Waveform

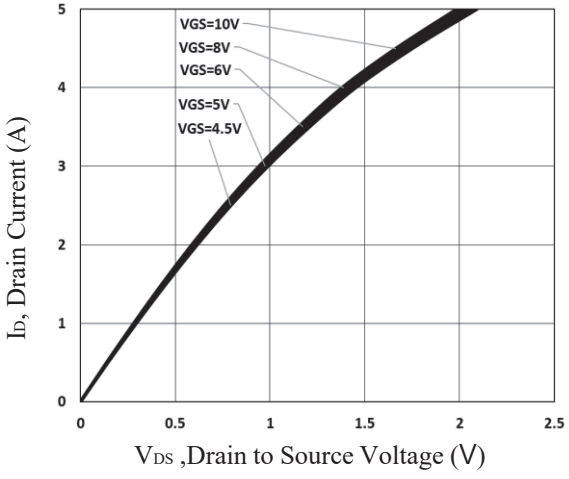


Fig.5 Typical Output Characteristics

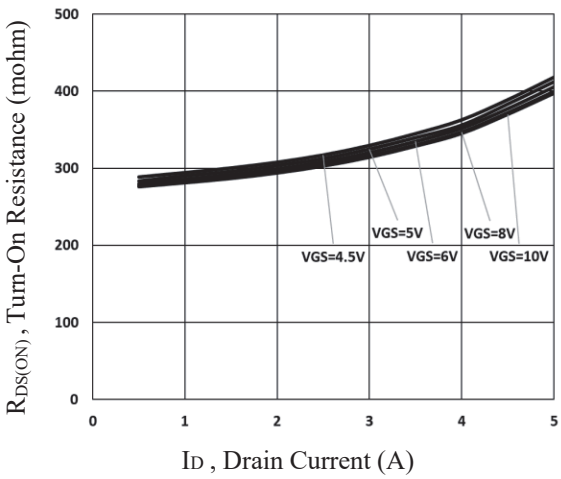


Fig.6 Turn-On Resistance vs. I_D

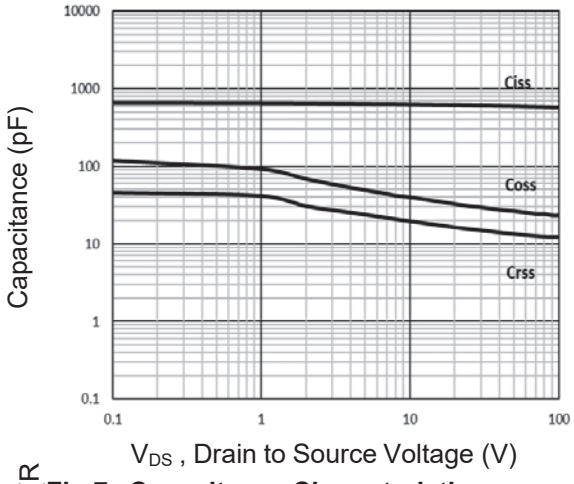


Fig.7 Capacitance Characteristics

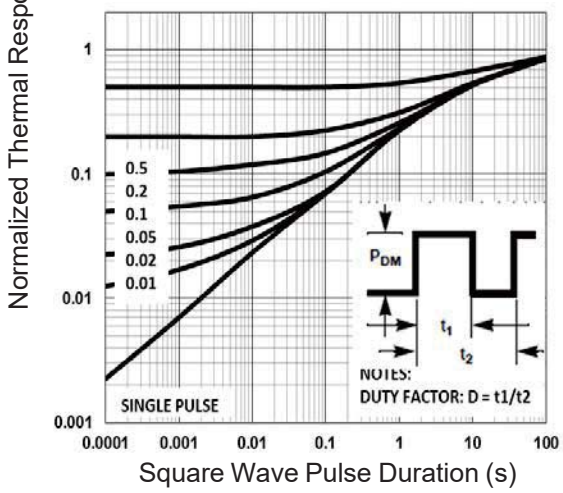


Fig.8 Normalized Transient Impedance

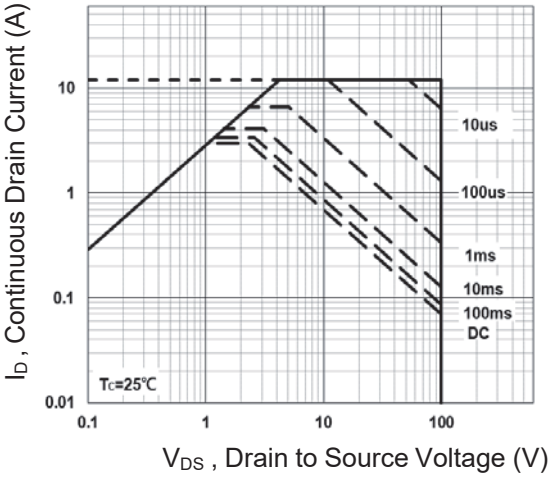


Fig.9 Maximum Safe Operation Area

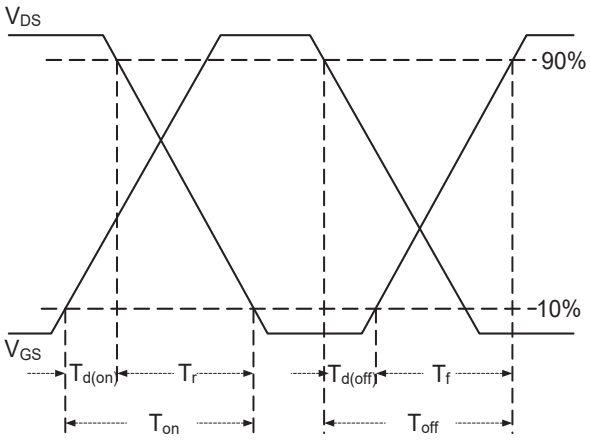


Fig.10 Switching Time Waveform

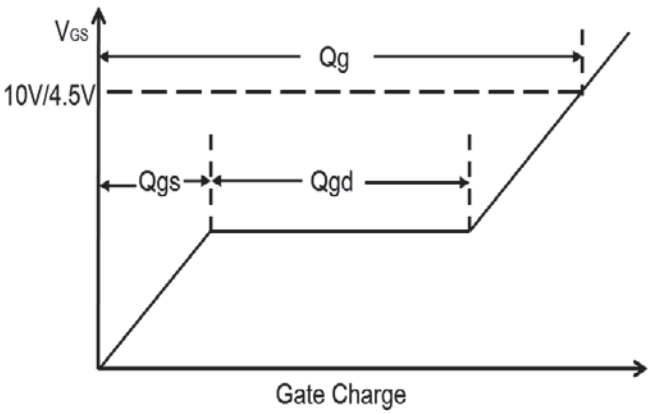
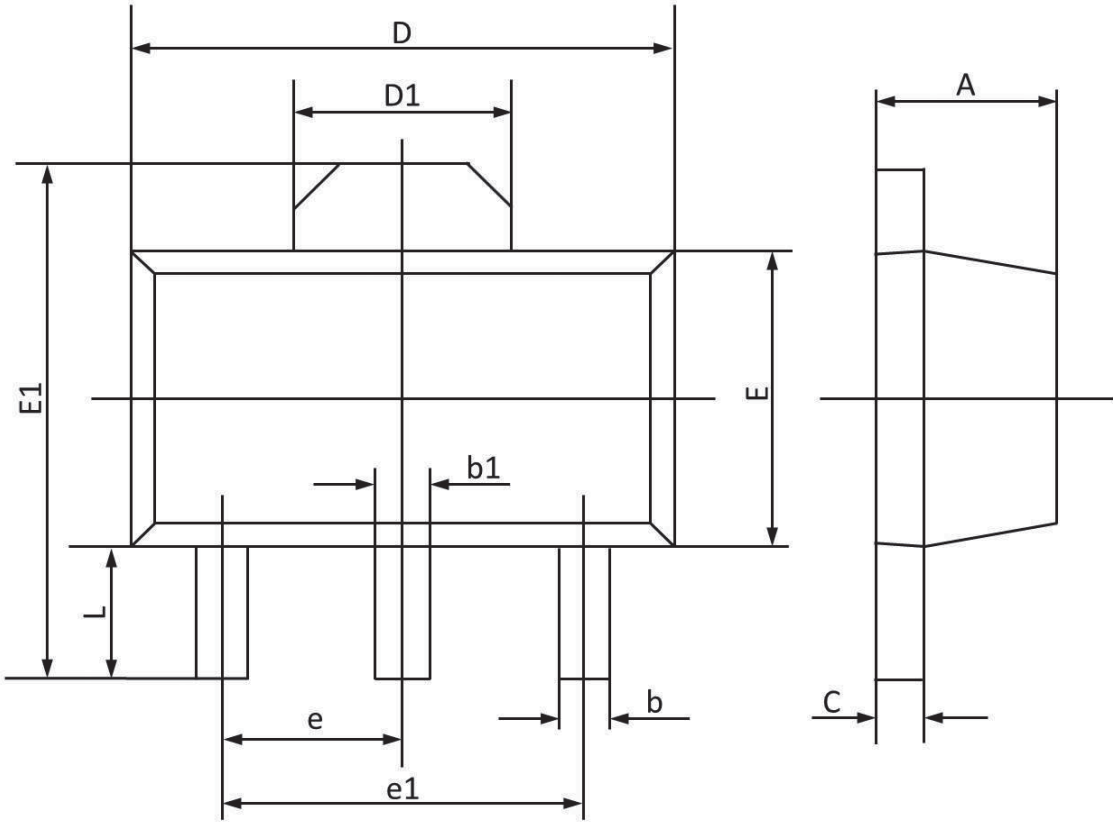


Fig.11 Gate Charge Waveform

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