

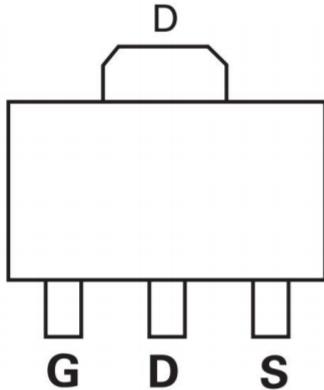
Product Summary

- V_{DS} -60 V
- I_{DS} (at $V_{GS}=-10V$) -4.0A
- $R_{DS\ (ON)}$ (@ $V_{GS}=-10V$) $\leq 88m\Omega$ (Typ)

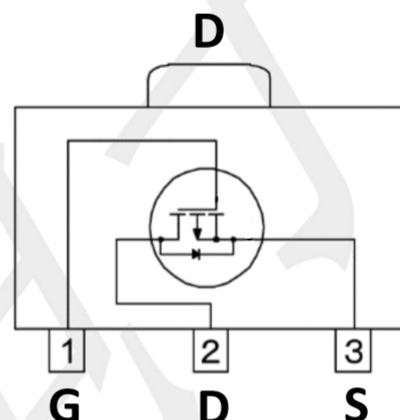
Application

- PWM applications
- Load switch
- Power management

Package and Pin Configuration



SOT89-3



Circuit diagram

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-4.0	A
Pulsed Drain Current ($t = 100 \mu s$)	I_{DM}	-16	A
Total Power Dissipation	P_{DTOT}	1.6	W
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance (Note)	R_{thJA}	78	°C/W

Note : When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	BV _{DSS}	-60	--	--	V
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D = -250uA	V _{GS(th)}	-1.0	-1.5	-3.0	V
Gate-Source Leakage	V _{DS} =0V, V _{GS} = ±20V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V _{DS} = -48V, V _{GS} =0V	I _{DSS}	--	--	-1	μA
Drain-Source On-State Resistance (Note 1)	V _{GS} = -10V, I _D = -4.0A	R _{DS(on)}	--	88	100	mΩ
	V _{GS} = -4.5V, I _D = -2.0A		--	110	140	
Forward Transconductance (Note 2)	V _{DS} = -5V, I _D = -3.0A	g _{fs}	--	6.7	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V _{DS} = -48V, I _D = -3.0A, V _{GS} = -4.5V	Q _g	--	11.8	--	nC
Gate-Source Charge (Note 3)		Q _{gs}	--	1.8	--	
Gate-Drain Charge (Note 3)		Q _{gd}	--	6.5	--	
Input Capacitance	V _{DS} = -15V, V _{GS} = 0V, F= 1.0MHz	C _{iss}	--	1060	--	pF
Output Capacitance		C _{oss}	--	71	--	
Reverse Transfer Capacitance		C _{rss}	--	50	--	
Switching						
Turn-On Delay Time (Note 3)	V _{DS} = -15V, I _D = -1.0A, V _{GS} = -10V, R _G = 3.3Ω	t _{d(on)}	--	8.8	--	nS
Rise Time (Note 3)		t _r	--	19.5	--	
Turn-Off Delay Time (Note 3)		t _{d(off)}	--	47	--	
Fall Time (Note 3)		t _f	--	9.5	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V _{GS} = 0V, I _F = -1.0A	V _{SD}	--	-0.8	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I _S	--	--	-4.0	A
Pulsed Current (Note 1)		I _{SM}	--	--	-16	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

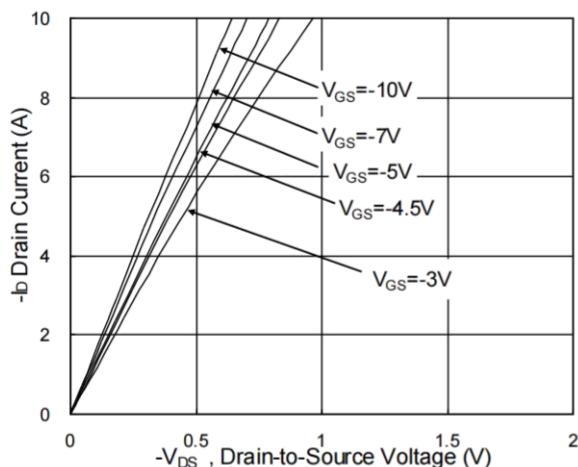


Fig.1 Typical Output Characteristics

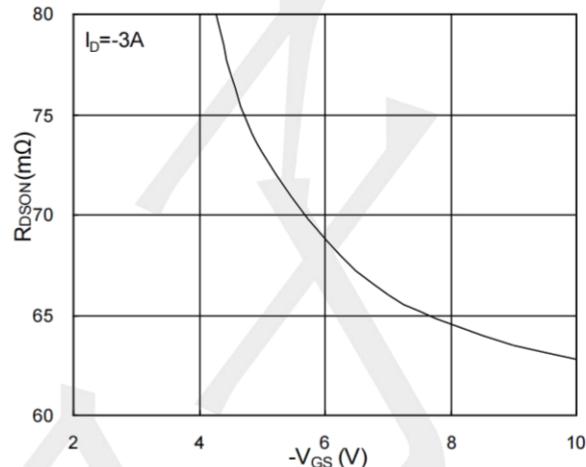


Fig.2 On-Resistance v.s Gate-Source

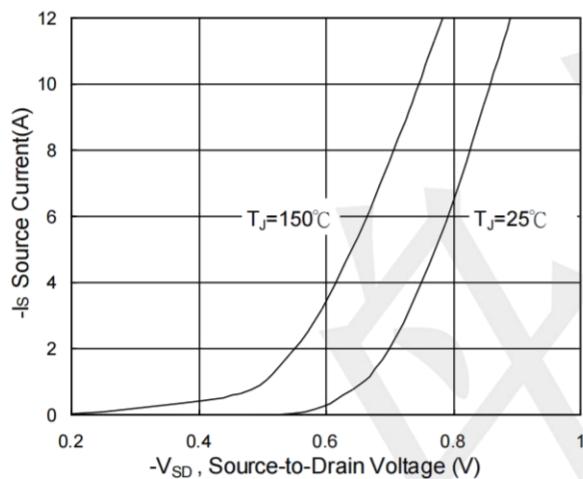


Fig.3 Forward Characteristics of Reverse

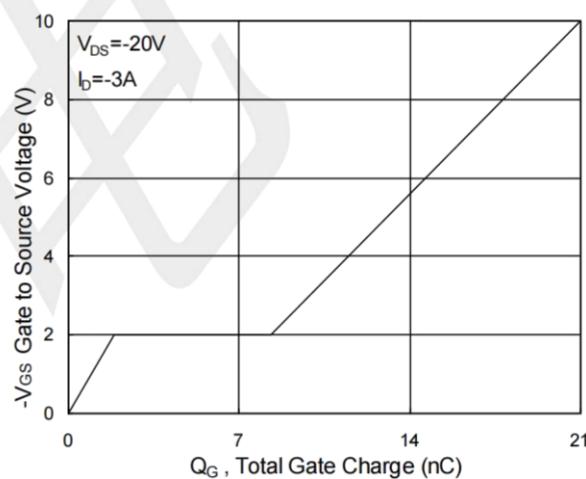


Fig.4 Gate-Charge Characteristics

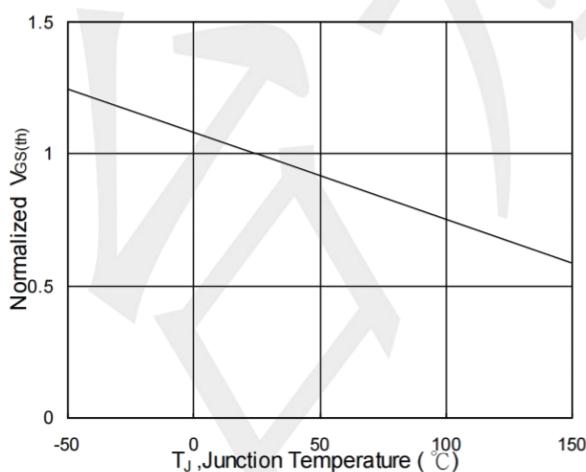


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

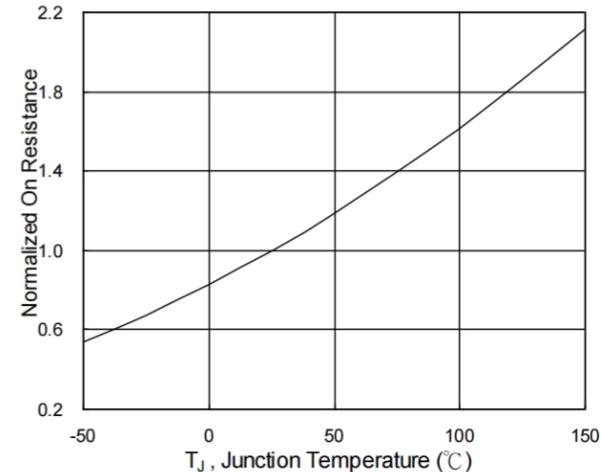


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

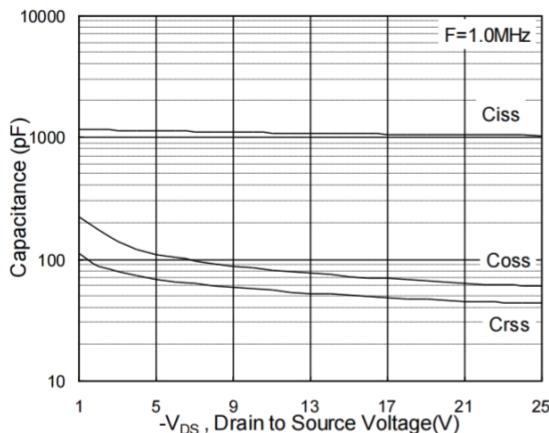


Fig.7 Capacitance

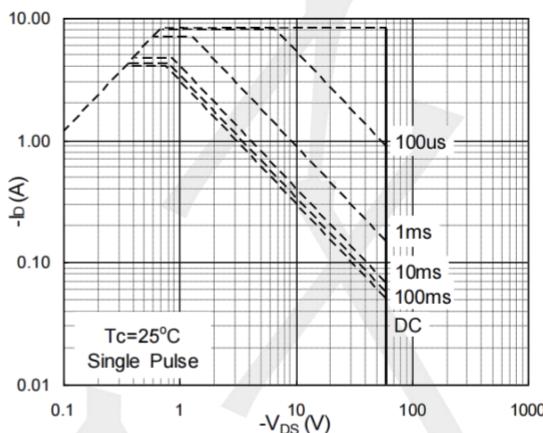


Fig.8 Safe Operating Area

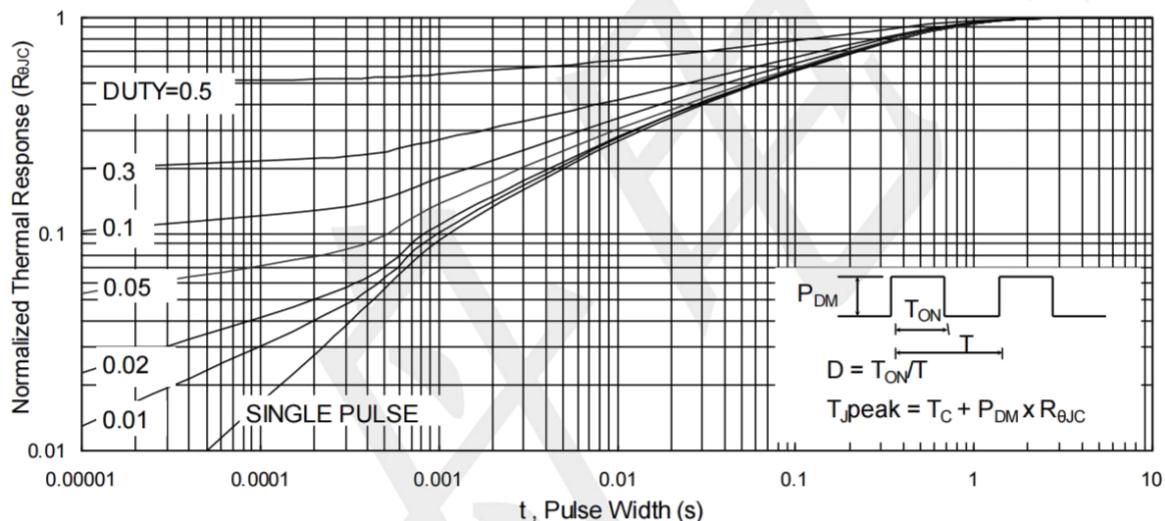


Fig.9 Normalized Maximum Transient Thermal Impedance

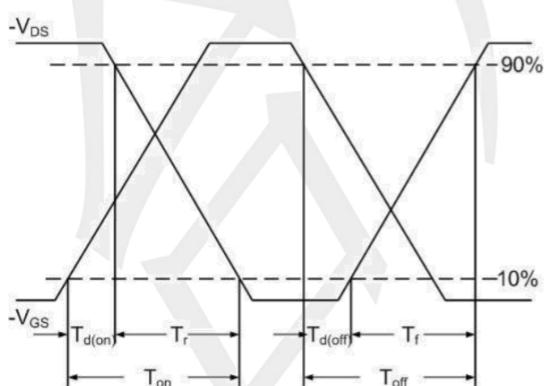


Fig.10 Switching Time Waveform

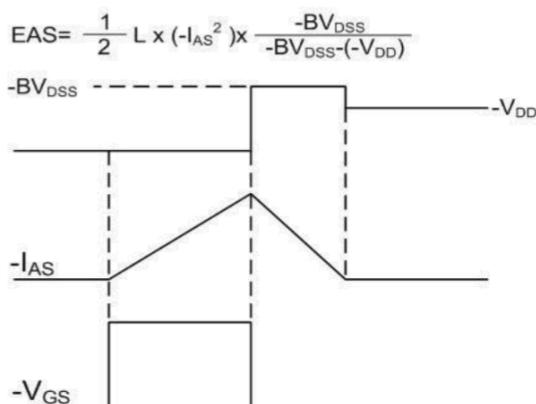
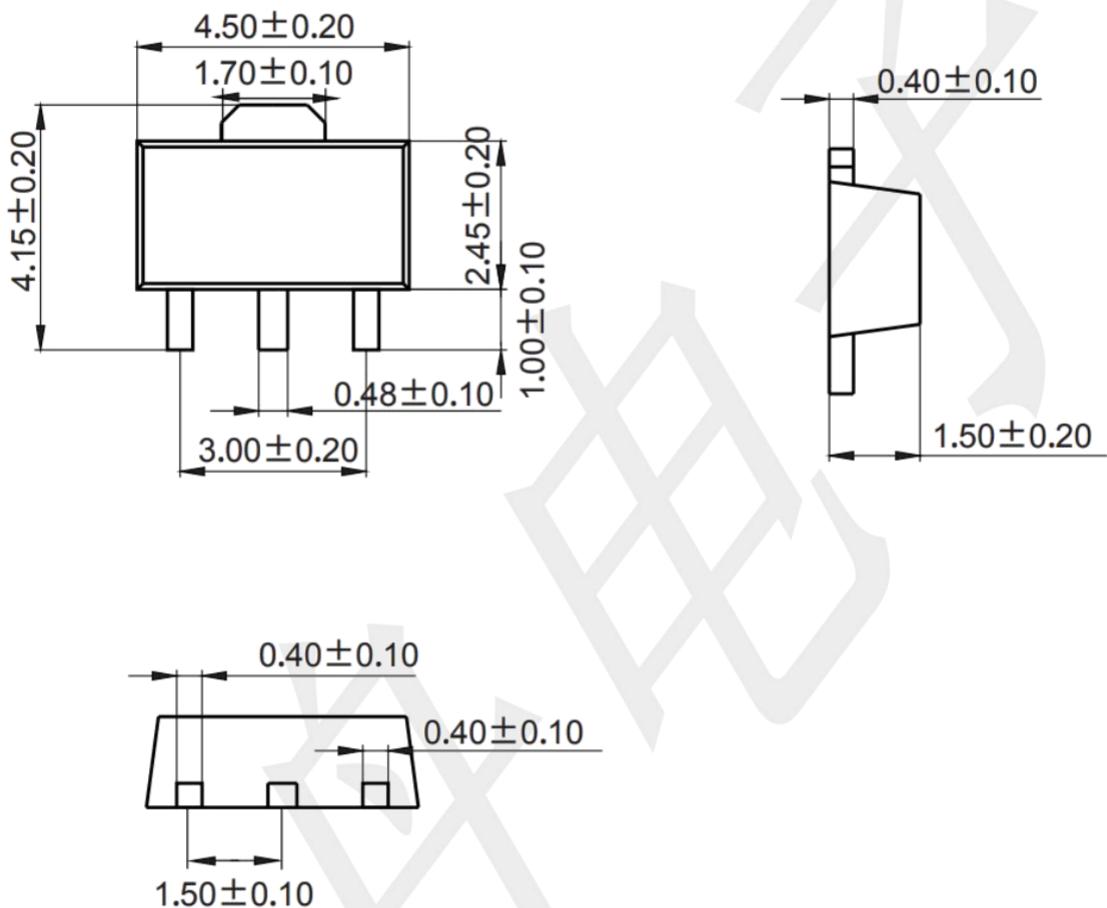


Fig.11 Unclamped Inductive Waveform

Package Information -(unit: mm)

SOT89-3



Mounting Pad Layout (unit: mm)

