

-16V/15mΩ@-4.5V P-Channel MOSFET

Features

- $V_{DS(max)} = -16V$
- $I_D(max) = -8.5A$
- $R_{DS(ON)} = 15m\Omega(Typ.)@V_{GS} = -4.5V$
- $R_{DS(ON)} = 20m\Omega(Typ.)@V_{GS} = -2.5V$
- Improved dv/dt capability
- Green Device Available
- Fast switching

Maximum Ratings (Tc = 25°C, Unless Otherwise Noted)

Parameters	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-16	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current - Continuous(TC=25°C)	I_D	-8.5	A
Drain Current - Continuous(TC=100°C)		-5.7	A
Drain Current - Pulsed	I_{DM}^1	-34	A
Power Dissipation(TC=25°C)	P_D	1.56	W
Power Dissipation - Derate above 25°C		0.012	W/°C
Storage Temperature Range	T_{STG}	-55~ 150	°C
Operating Junction Temperature Range	T_J	-55~ 150	°C

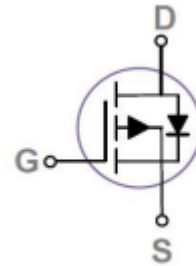
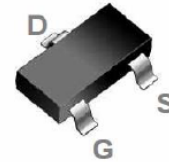
Thermal Characteristics

Parameter	Symbol	Max.	Typ.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	80	°C/W

Applications

- Notebook
- Hand-Held Instrument
- Load Switch

SOT23-3 Pin Configuration



Note:

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

Electrical Characteristics(T_j = 25 °C, Unless Otherwise Noted)

Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain to Source Breakdown Volage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-16	---	---	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25 °C , I _D = -1mA	---	-0.01	---	V/ °C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-12V, V _{GS} =0V, T _J =25 °C	---	---	-1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V	---	---	±100	nA

On Characteristics

Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-8.5A	---	15	23	mΩ
		V _{GS} =-2.5V, I _D =-5A	---	20	30	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	---	-1	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		---	3	---	mV/ °C
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _S =-1A	---	7	---	S

Dynamic And Switching Characteristics

Total Gate Charge ^{2,3}	Q _g	V _{DS} =-10V, V _{GS} = -4.5V, I _D =-3A	---	9.6	13	nC
Gate-Source Charge ^{2,3}	Q _{gs}		---	1.6	2	
Gate-Drain Charge ^{2,3}	Q _{gd}		---	2	4	
Turn-on Delay Time ^{2,3}	T _{d(on)}	V _{DD} =-10V, I _D =-1A V _{GS} =-4.5V, R _{GEN} =25Ω	---	6	11	nS
Turn-on Rise Time ^{2,3}	T _r		---	21.6	41	
Turn-off Delay Time ^{2,3}	T _{d(off)}		---	13.8	26	
Turn-off Fall Time ^{2,3}	T _f		---	7.6	14	
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, F=1MHz	---	850	1230	pF
Output Capacitance	C _{oss}		---	70	100	
Reverse Transfer Capacitance	C _{rss}		---	55	80	

Drain-Source Diode Characteristics And Maximum Ratings

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Continuous Source Current	I _S	V _G =V _D =0V,	---	---	-8.5	A
Pulsed Source Current ²	I _{SM}	Force Current	---	---	-34	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25 °C	---	---	-1.2	V

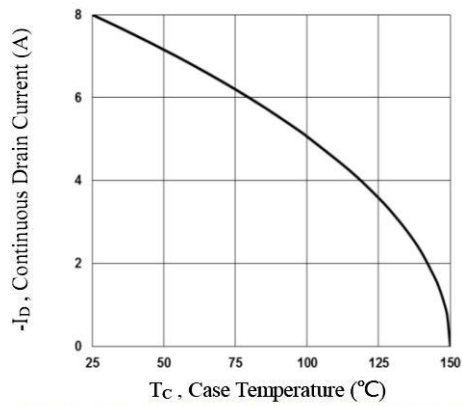


Fig.1 Continuous Drain Current vs. T_c

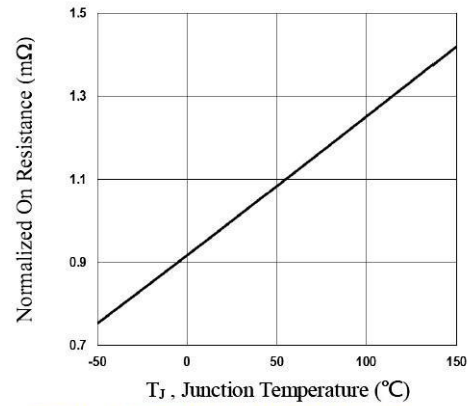


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

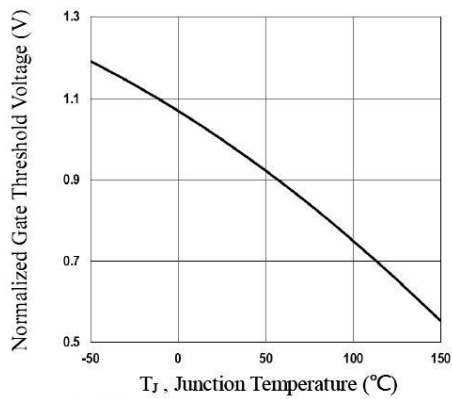


Fig.3 Normalized V_{th} vs. T_j

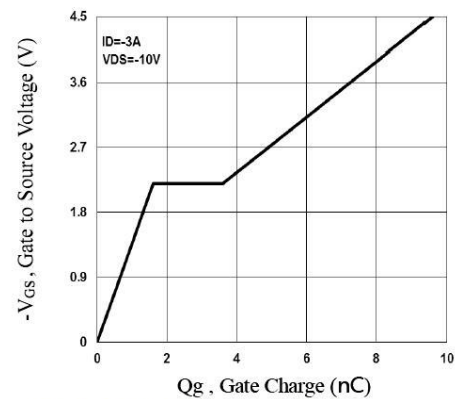


Fig.4 Gate Charge Waveform

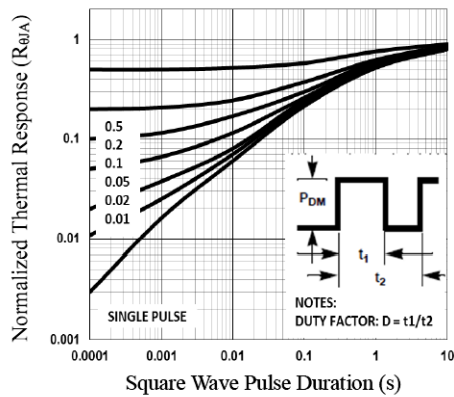


Fig.5 Normalized Transient Impedance

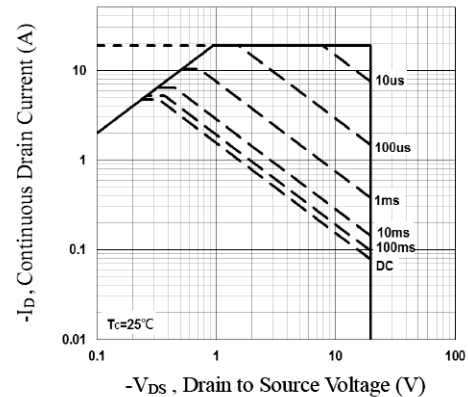


Fig.6 Maximum Safe Operation Area

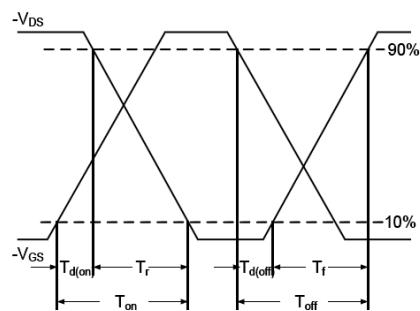


Fig.7 Switching Time Waveform

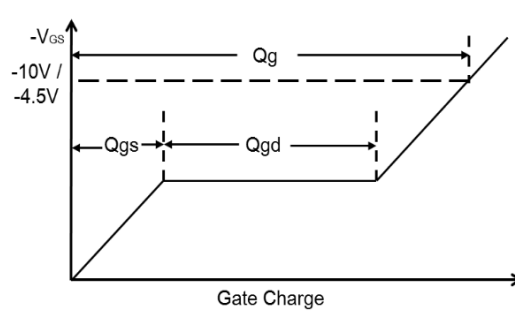
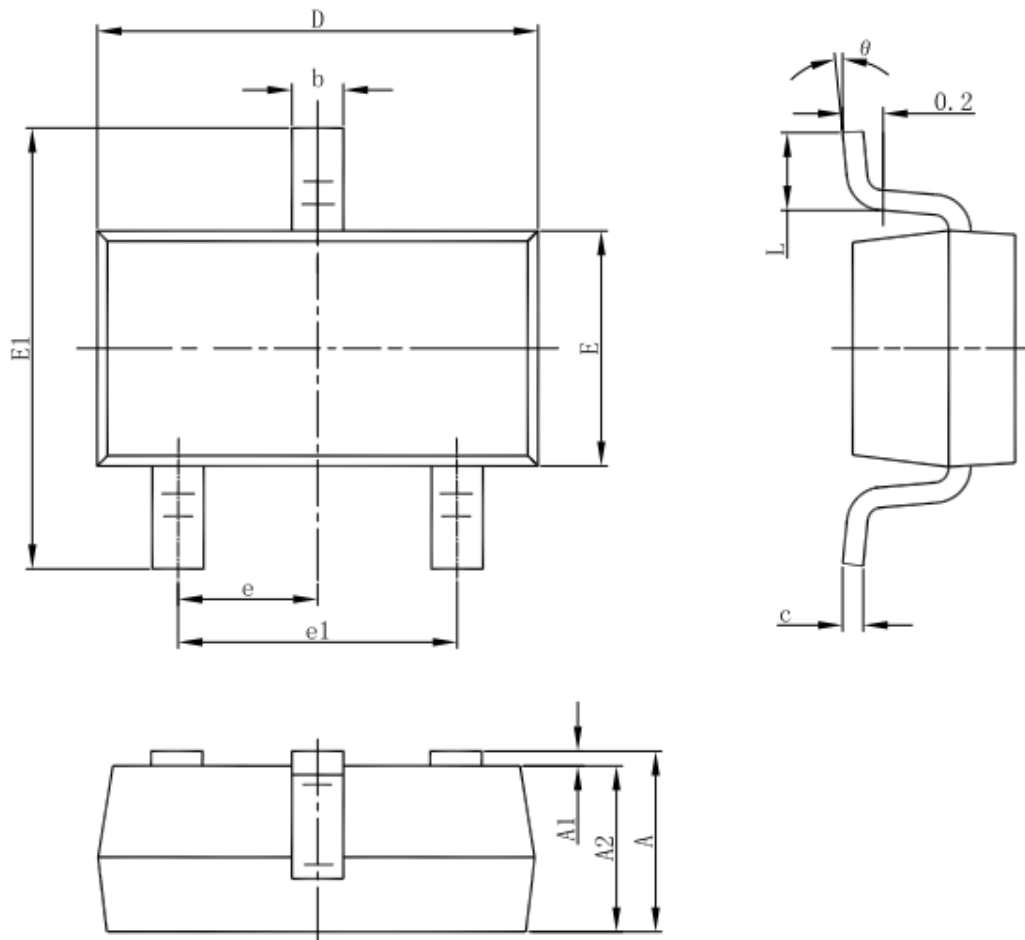


Fig.8 Gate Charge Waveform

SOT23-3 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°