60V/2Ω@10V N-Channel MOSFET

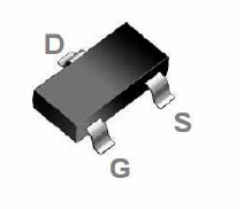
Features

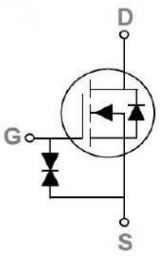
- VDS(max)=60V
- ID(max)=0.3A
- RDS(ON) =2Ω(max)@VGS = 10V
- RDS(ON) =3Ω(max)@VGS = 4.5V
- Improved dv/dt capability
- Green Device Available
- Fast switching
- G-S ESD Protection Diode Embedded
- ESD Rating: 2000V HBM

Applications

- MB / VGA / Vcore
- Hand-Held Instrument
- Load Switch

SOT23-3S Pin Configuration





Maximum Ratings (Tc = 25℃, Unless Otherwise Noted)

Parameters	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current - Continuous(TC=25℃)	I_D	0.3	A
Drain Current - Continuous(TC=100℃)		0.2	A
Drain Current - Pulsed	I_{DM}[1]	1.2	A
Power Dissipation(TC=25℃)	P_D	0.35	W
Power Dissipation - Derate above 25℃		0.003	W/℃
Storage Temperature Range	T_{STG}	-55~ 150	℃
Operating Junction Temperature Range	Tj	-55~ 150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Typ.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	357	---	℃/W

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.

Electrical Characteristics(Tj = 25℃, 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	60	---	---	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25℃, I_D=1mA	---	0.04	---	V/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V, T_J=25℃	---	---	1	μA
		V_{DS}=48V, V_{GS}=0V, T_J=125℃	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	---	---	±100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.5A	---	---	2	Ω
		V_{GS}=4.5V, I_D=0.2A	---	---	3	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	---	2.5	V
VGS(th) Temperature Cofficient	$\triangle V_{GS(th)}$		---	-4	---	mV/℃
Forward Transconductance	gfs	V_{DS}=10V, I_D=0.1A	---	0.24	---	S

Dynamic And Switching Characteristics

Total Gate Charge[2,3]	Q_g	V_{DS}=30V, V_{GS}=10V, I_D=0.2A	---	1.1	2	nC
Gate-Source Charge[2,3]	Q_{gs}		---	0.1	0.2	
Gate-Drain Charge[2,3]	Q_{gd}		---	0.23	0.5	
Turn-on Delay Time[2,3]	$T_{d(on)}$	V_{DD}=30V, I_D=0.2A V_{GS}=10V, R_{GEN}=6Ω	---	3	6	nS
Turn-on Rise Time[2,3]	T_r		---	5	10	
Turn-off Delay Time[2,3]	$T_{d(off)}$		---	14	27	
Turn-off Fall Time[2,3]	T_f		---	9	17	
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, F=1MHz	---	30.6	45	pF
Output Capacitance	C_{oss}		---	5.5	10	
Reverse Transfer Capacitance	C_{rss}		---	4	8	

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, Force Current	---	---	0.3	A
Pulsed Source Current	I_{SM}		---	---	1.2	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A, T_J=25℃	---	---	1	V

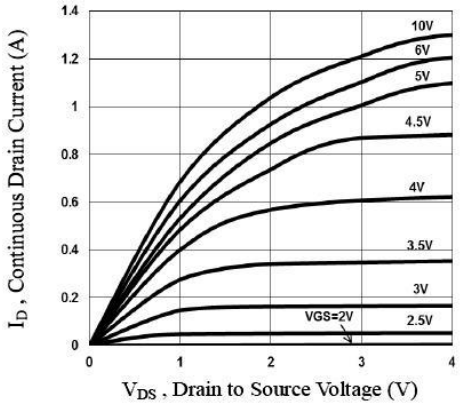


Fig.1 Output Characteristics

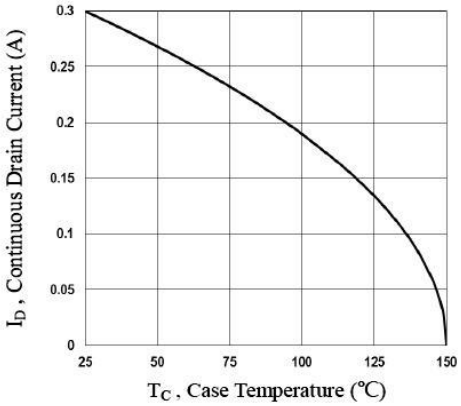


Fig.2 Continuous Drain Current vs. T_c

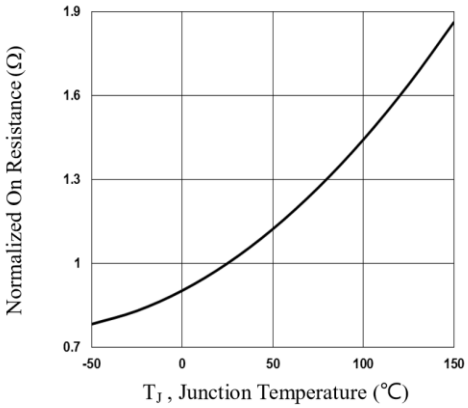


Fig.3 Normalized RDSON vs. T_J

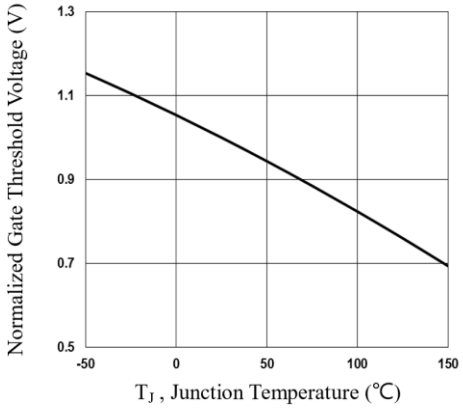


Fig.4 Normalized V_{th} vs. T_J

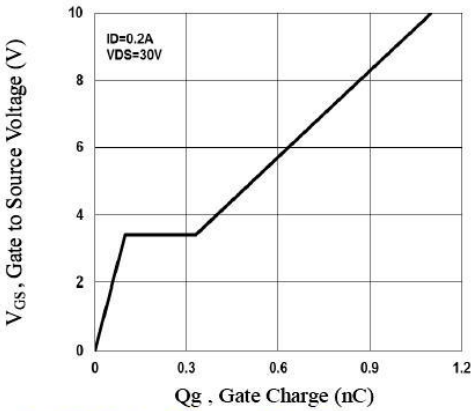


Fig.5 Gate Charge Waveform

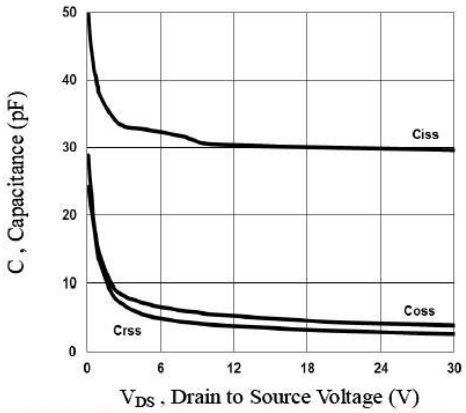


Fig.6 Capacitance Characteristics

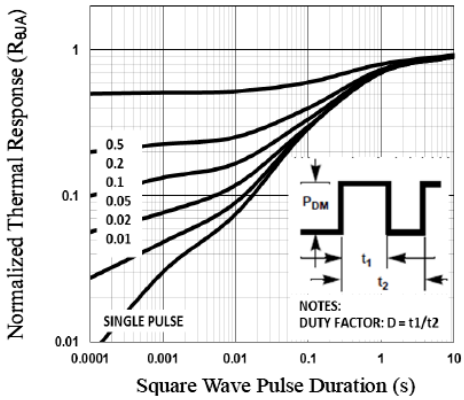


Fig.7 Normalized Transient Impedance

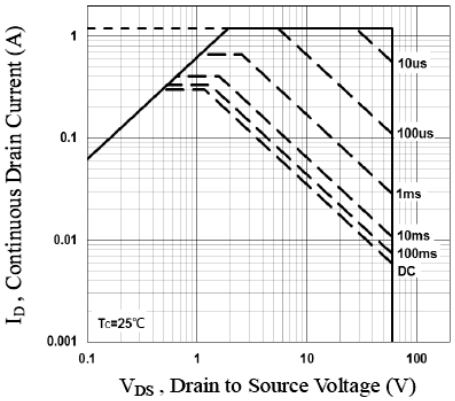


Fig.8 Maximum Safe Operation Area

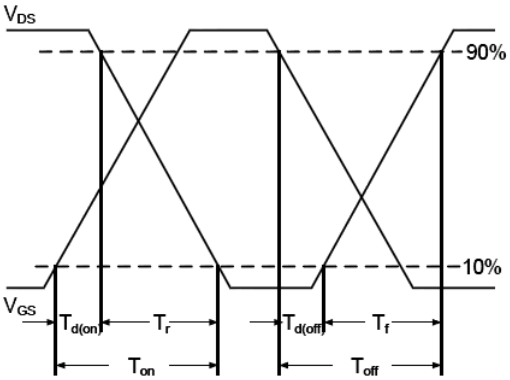


Fig.9 Switching Time Waveform

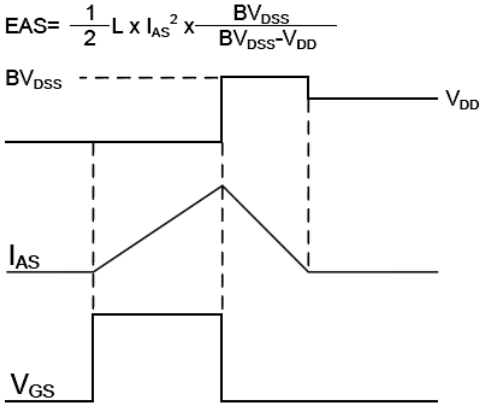
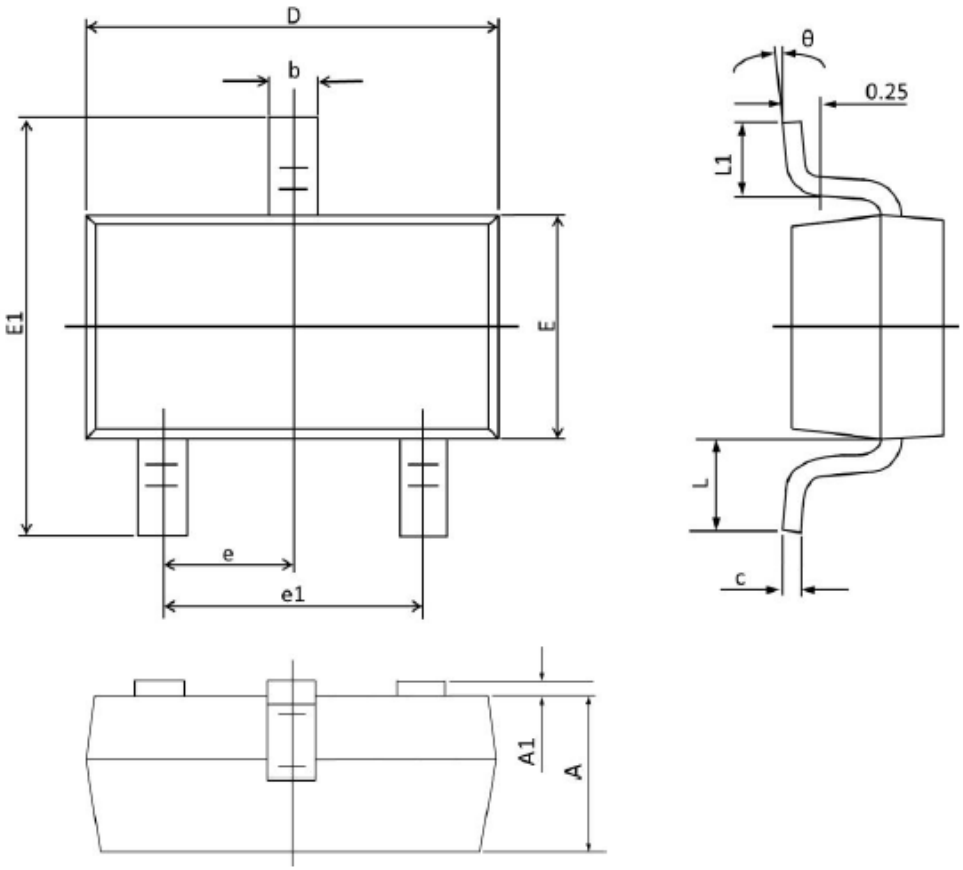


Fig.10 EAS Waveform

SOT 23-3S PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°