

P-Channel -12V (D-S) Power MOSFET

Features

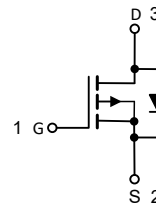
- 100% Avalanche Tested
- RoHS Compliant, Halogen Free, Pb-Free
- Fast switching and reverse body recovery
- AEC-Q101 Qualified



SOT-23

Applications

- Relay driver
- Switching circuits
- High-side load switch
- High-speed line driver



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

Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	-12	V
Gate Source Voltage	V_{GS}	± 8	V
Drain Current, Continuous $V_{GS}=-10\text{V}$	I_D	-3.5	A
Drain Current, Pulsed (Note 1)	I_{DM}	-14	A
Power Dissipation	P_D	1.25	W
Operating Junction/ Storage Temperature Range	T_J / T_{STG}	-55 to +150	$^\circ\text{C}$

Note 1: Single pulse; $t_p \leq 1\mu\text{s}$.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Ambient (Note 2)	R_{thJA}	100	$^\circ\text{C/W}$

Note 2: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-12	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-12V, V _{GS} =0V	--	--	-1	uA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =-250uA	-0.4	--	-1	V
Gate Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance (Note 3)	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4.4A	--	33	50	mΩ
		V _{GS} =-2.5V, I _D =-3.8A	--	48	85	
Total Gate Charge	Q _g	V _{GS(off)} =0V, V _{GS(on)} =-4.5V, V _{DS} =-8V, I _D =-3.5A	--	12	--	nC
Gate-Source Charge	Q _{gs}		--	1.5	--	
Gate-Drain Charge	Q _{gd}		--	3	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =-10V, V _{DD} =-10V, R _G =3Ω, I _D =-1.0A	--	11.3	--	ns
Turn-on Rise Time	t _r		--	18.1	--	
Turn-off Delay Time	t _{d(off)}		--	32.4	--	
Turn-off Fall Time	t _f		--	38.1	--	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-12V, f=1MHz	--	638	--	pF
Output Capacitance	C _{oss}		--	238	--	
Reverse Transfer Capacitance	C _{rss}		--	221	--	

Reverse Diode Characteristics (T_A =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I _{SD}	T _C =25°C	--	--	-3.5	A
Diode Forward Voltage (Note 3)	V _{SD}	I _F =-1.7A, V _{GS} =0V	--	-0.8	-1.2	V

Note 3: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

Typical Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 - Output Characteristics

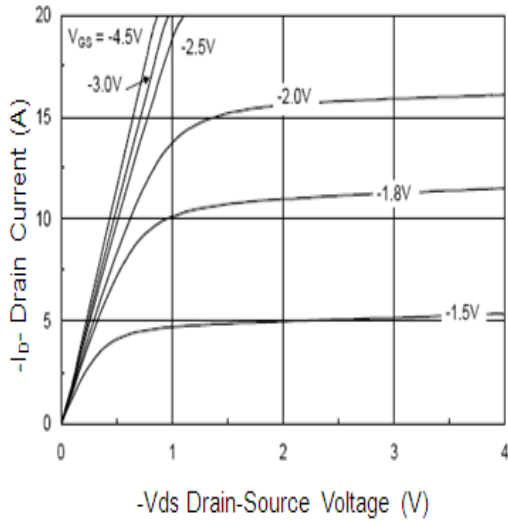


Fig.2 - Transfer Characteristics

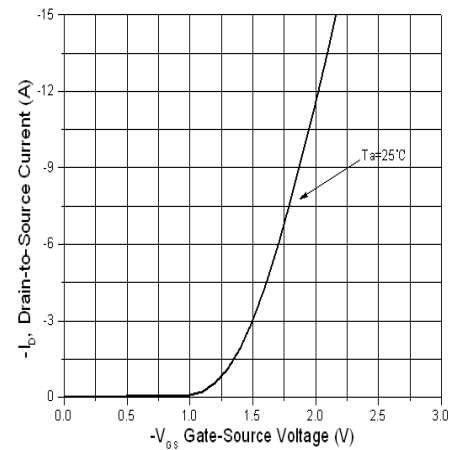


Fig.3 - $R_{DS(on)}$ vs. Junction Temperature

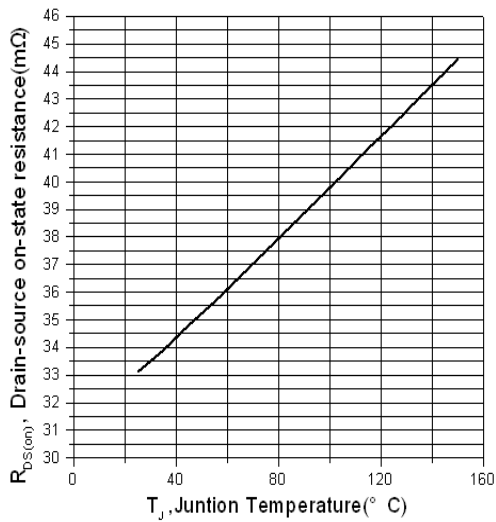


Fig.4 - V_{th} vs. Junction Temperature

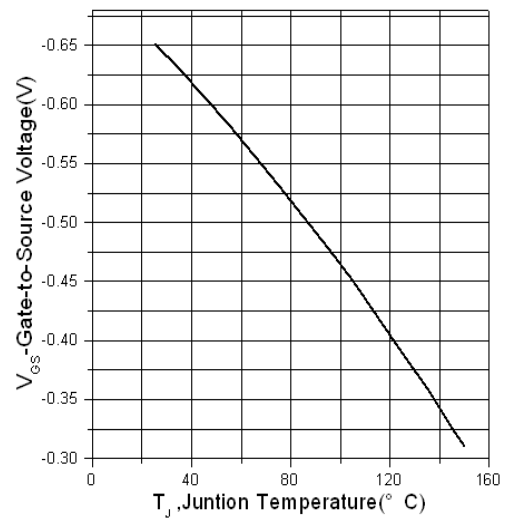


Fig.5 - Capacitance

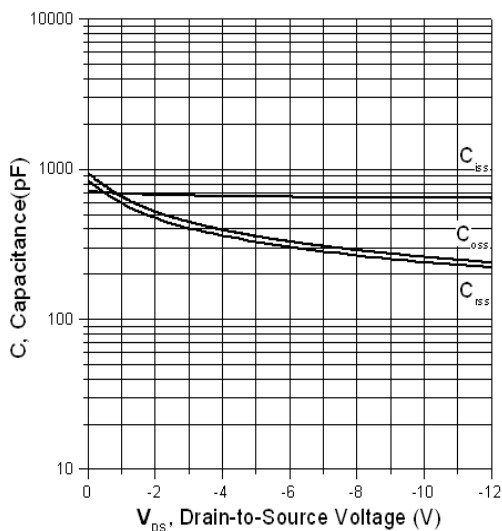
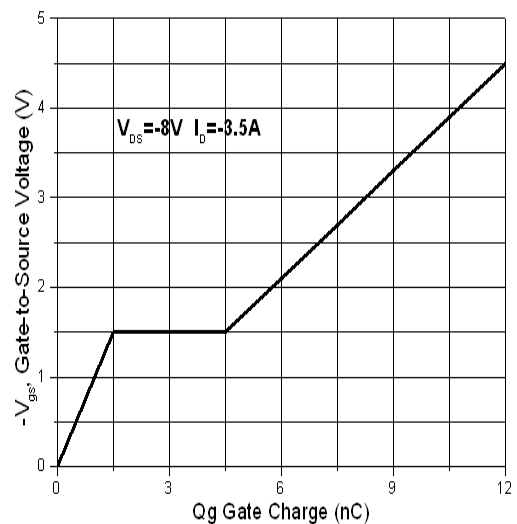


Fig.6 - Gate charge



Typical Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 - Drain-to-Source Breakdown Voltage

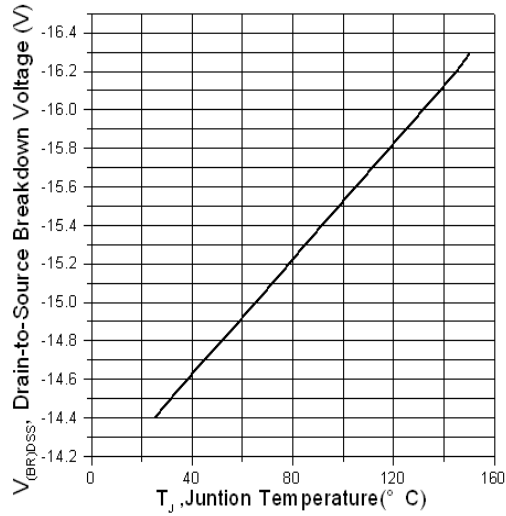


Fig.8 - Drain Current

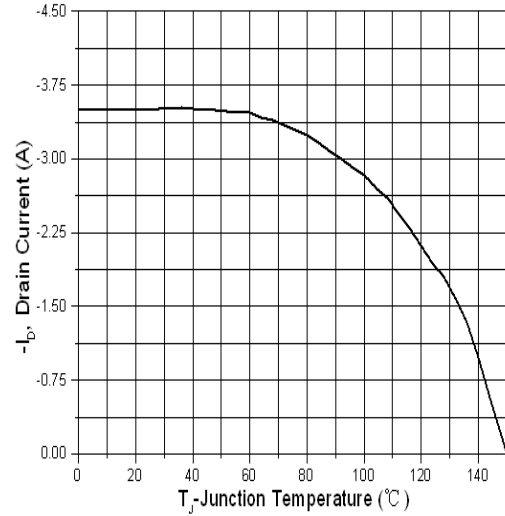
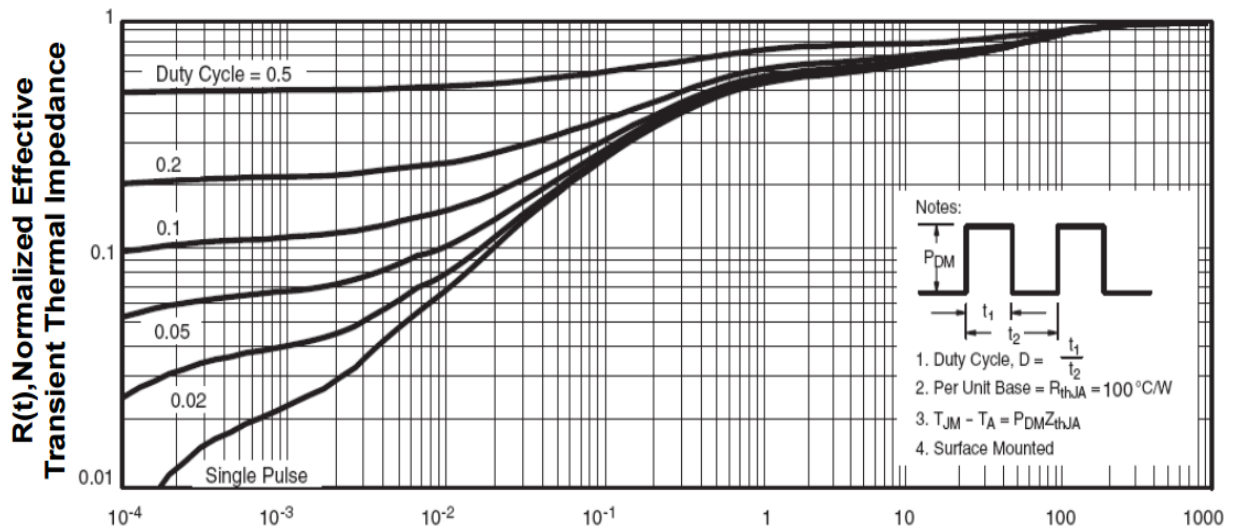
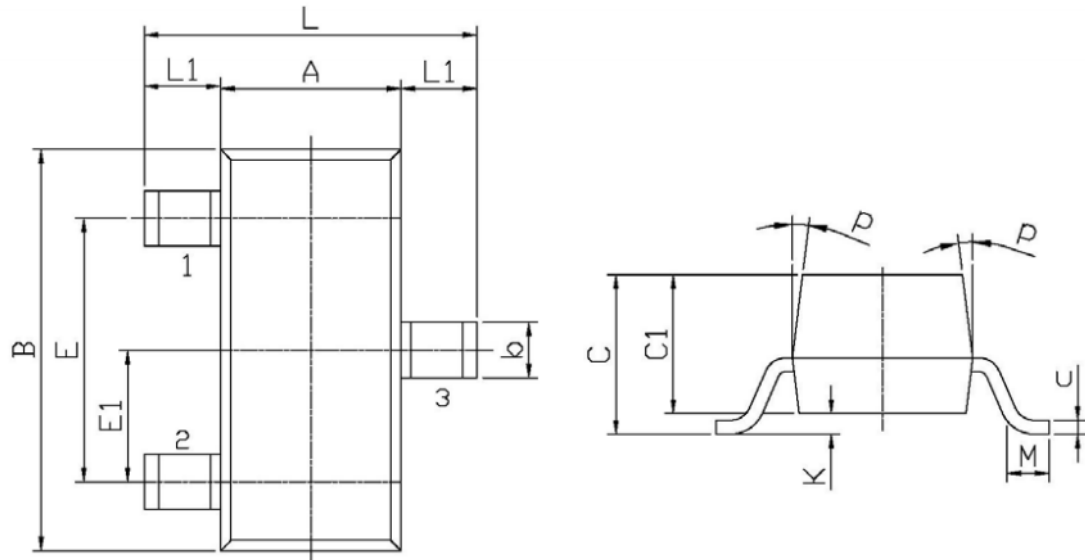


Fig.9 - Normalized Maximum Transient Thermal Impedance



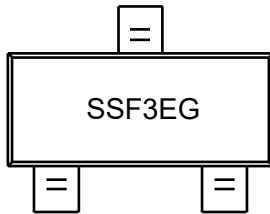
Package Outline Dimensions (Unit: millimeters)

SOT-23



Symbol	Dimensions in Millimeter		Symbol	Dimensions in Millimeter	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30 Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20 Min	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

Marking Outline



Part Name: ASSF1341

1. P/N Mark: SSF3EG

Revision History

Version	Date	Major Changes
Rev.A	2025.08.04	Official Release

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