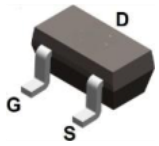
N-Channel 30V (D-S) Power MOSFET

Features

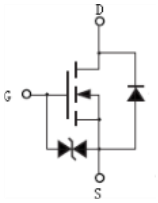
- 100% Avalanche Tested
- RoHS Compliant, Halogen Free, Pb-Free
- Fast switching and reverse body recovery
- AEC-Q101 Qualified



SOT-523

Applications

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



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)				
Parameter		**Symbol**	**Value**	**Unit**
Drain Source Voltage		V_{DS}	30	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V	T_C=25°C	I_D	100	mA
Drain Current, Pulsed *(Note 1)*		I_{DM}	500	mA
Power Dissipation	T_C=25°C	P_D	150	mW
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Single pulse; $t_p \leq 1us$.

Thermal Characteristics			
Parameter	**Symbol**	**Max**	**Unit**
Thermal Resistance Junction to Ambient *(Note 2)*	R_{thJA}	833	°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=10μA	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=100uA	0.8	--	2.2	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±10	uA
Drain-Source On-state Resistance *(Note 3)*	$R_{DS(on)}$	V_{GS}=10V, I_D=0.5A	--	--	3	Ω
		V_{GS}=4.5V, I_D=0.2A	--	--	4	
Total Gate Charge	Q_g	$V_{GS(off)}$=0V, $V_{GS(on)}$=4.5V, V_{DD}=10V, I_D=0.5A	--	0.45	--	nC
Gate-Source Charge	Q_{gs}		--	0.2	--	
Gate-Drain Charge	Q_{gd}		--	0.1	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, I_D=0.5A , R_G=25 Ω	--	2.7	--	ns
Turn-on Rise Time	t_r		--	2.5	--	
Turn-off Delay Time	$t_{d(off)}$		--	13	--	
Turn-off Fall Time	t_f		--	8	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	21	--	pF
Output Capacitance	C_{oss}		--	12	--	
Reverse Transfer Capacitance	C_{rss}		--	0.3	--	

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	--	--	100	mA
Diode Forward Voltage *(Note 3)*	V_{SD}	I_F=0.5A, V_{GS}=0V	--	--	1.3	V

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

Typical Characteristics Curves (T_A = 25℃ unless otherwise noted)

Fig.1 - Output Characteristics

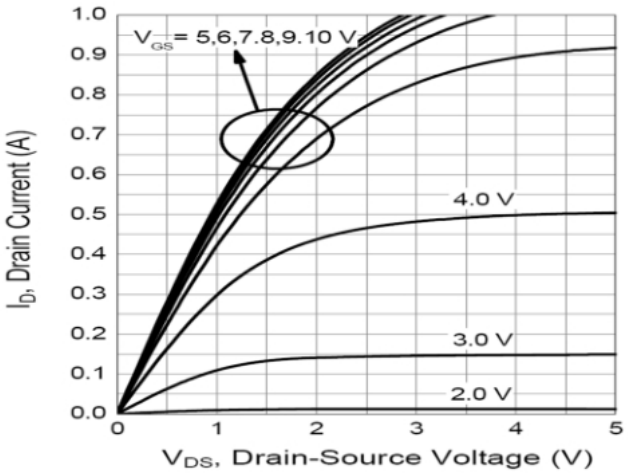


Fig.2 - Transfer Characteristics

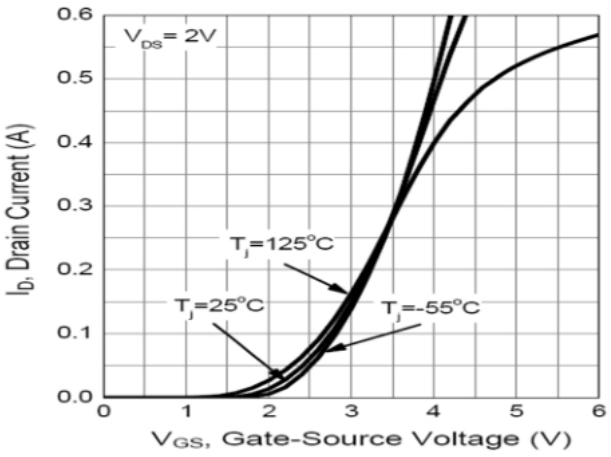


Fig.3 - RDS(on) vs. Gate-Source Voltage

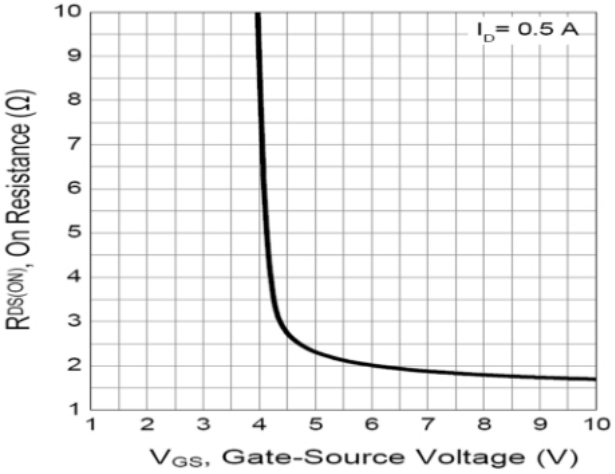


Fig.4 - on-Resistance vs.Tj

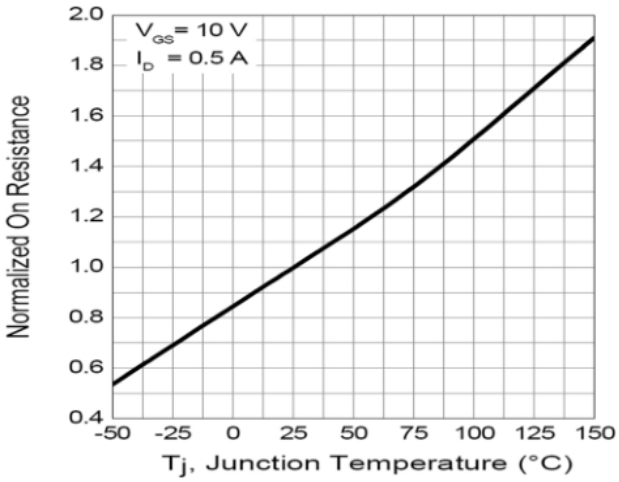


Fig.5 - on-Resistance vs. Drain Current

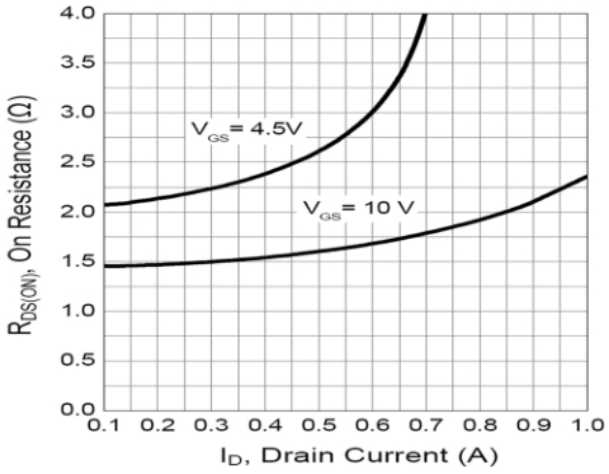
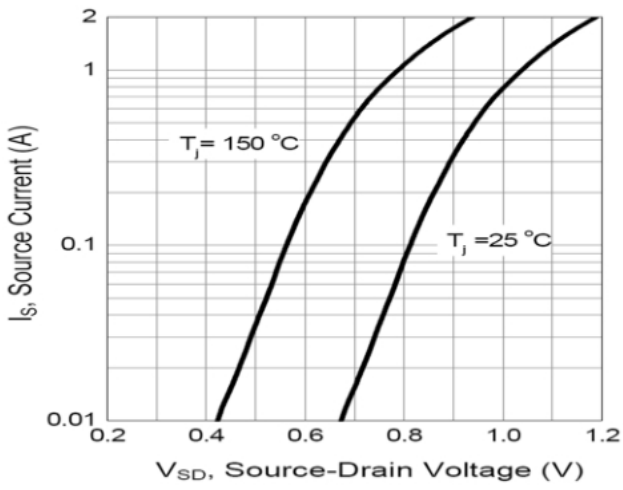


Fig.6 - Typical Forward Characteristics



Typical Characteristics Curves (T_A = 25℃ unless otherwise noted)

Fig.7 - Typical Junction Capacitance

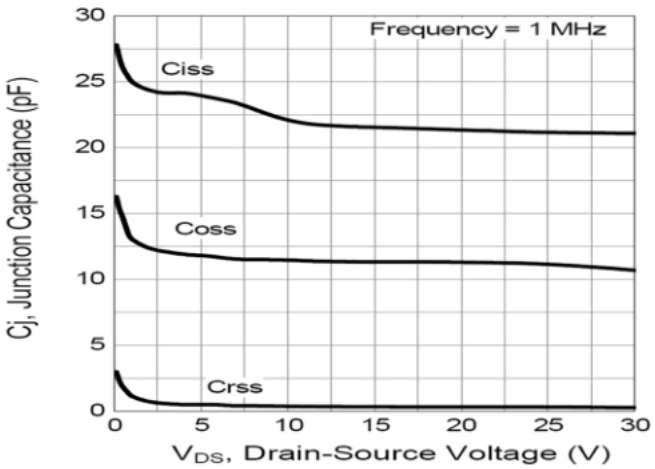


Fig.8 - Gate charge

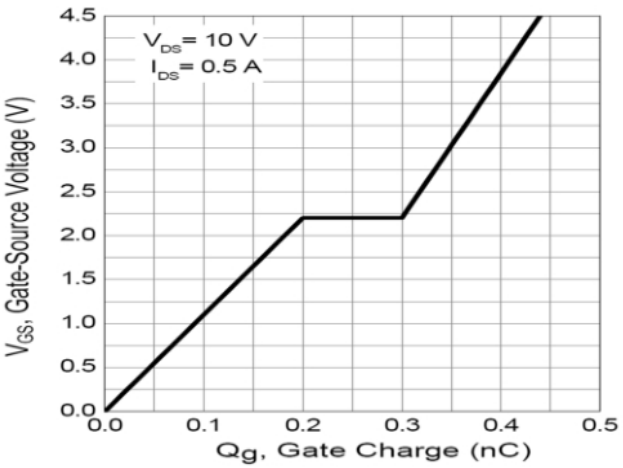
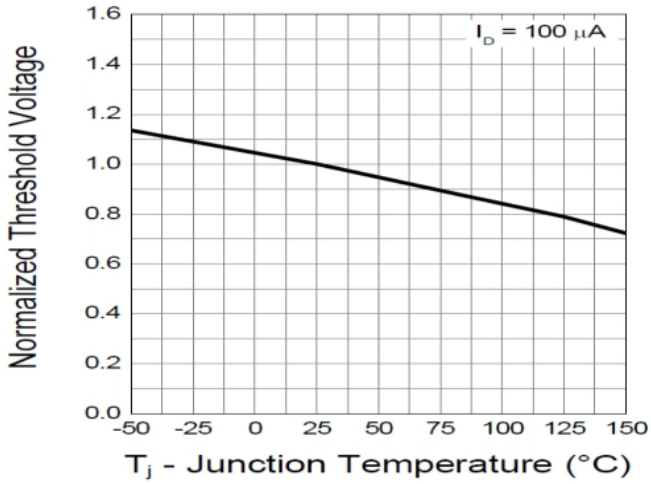
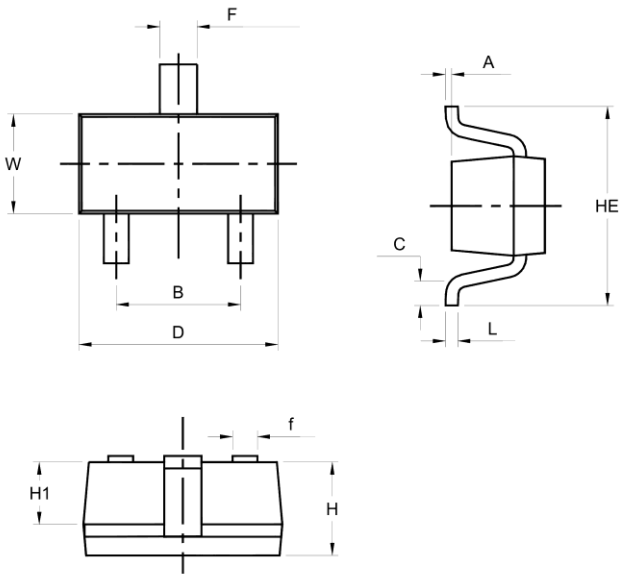


Fig.9 – Gate Threshold Voltage



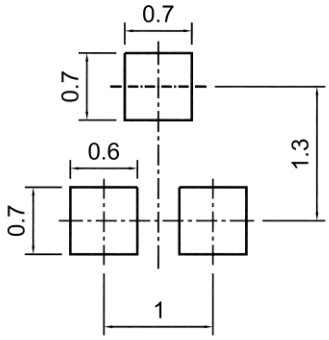
Package Outline Dimensions (Unit: millimeters)

SOT-523



UNIT	A	B	C	D	H	H1	HE	F	f	L	W
mm	0.1 MAX.	1.05 0.95	0.17 MIN.	1.7 1.5	0.85 0.65	0.6 0.4	1.7 1.5	0.35 0.25	0.25 0.15	0.15 0.05	0.9 0.7

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-523	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

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