



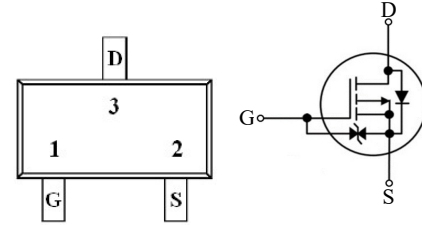
SM2317FDS

P-Channel Enhancement Mode Field Effect Transistor

FEATURES

- $R_{DS(ON)} \leq 45m\Omega @ V_{GS} = -10V$
- ESD protected $\geq 3KV$
- Suffix "H" indicates Halogen-free parts, ex. SM2317FDSH

PIN CONFIGURATION



Pin	Description
1	Gate
2	Source
3	Drain

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

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DSS}	-30	V	
Gate-Source Voltage	V_{GSS}	± 12	V	
Continuous Drain Current	I_D	$T_A = 25^\circ C$	-4.4	A
		$T_A = 70^\circ C$	-3.5	A
Pulsed Drain Current	I_{DM}	-18	A	
Maximum Power Dissipation	P_D	$T_A = 25^\circ C$	1.4	W
		$T_A = 70^\circ C$	0.9	W
Thermal Resistance Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	90	$^\circ C/W$	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	$^\circ C$	

Note

1. The device mounted on 1in² FR4 board with 2 oz copper



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Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	V_{DSS}	-30	-	-	V
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.6	-	-1.5	V
Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	-	-	± 10	μA
Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	I_{DSS}	-	-	-1	μA
Static Drain Source On-Resistance	$V_{GS}=-10V, I_D=-3.7A$	$R_{DS(ON)}$	-	28	45	m Ω
	$V_{GS}=-4.5V, I_D=-2A$		-	34	53	
	$V_{GS}=-2.5V, I_D=-2A$		-	61.5	80	
Dynamic						
Total Gate Charge	$V_{DS}=-15V, V_{GS}=-10V, I_D=-3.7A$	Q_g	-	21.0	-	nC
			10.6			
Gate-Source Charge	$V_{DS}=-15V, V_{GS}=-4.5V, I_D=-3.7A$	Q_{gs}	-	2.6	-	nC
Gate-Drain Charge		Q_{gd}	-	4.0	-	
Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	C_{iss}	-	918	-	pF
Output Capacitance		C_{oss}	-	101	-	
Reverse Transfer Capacitance		C_{rss}	-	87	-	
Turn-On Delay Time		$t_{d(on)}$	-	145	-	
Rise Time	$V_{DS}=-15V, I_D=-3.7A, V_{GS}=-10V,$ $R_G=3.3\Omega, R_L=4\Omega$	t_r	-	115	-	ns
Turn-Off Delay Time		$t_{d(off)}$	-	945	-	
Fall Time		t_f	-	378	-	
Drain-Source Body Diode						
Diode Forward Voltage	$V_{GS}=0V, I_S=-2.9A$	V_{SD}	-	-0.8	-1.2	V

Note

2. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$, Guaranteed by design, not subject to production testing.



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RATINGS AND CHARACTERISTIC CURVES

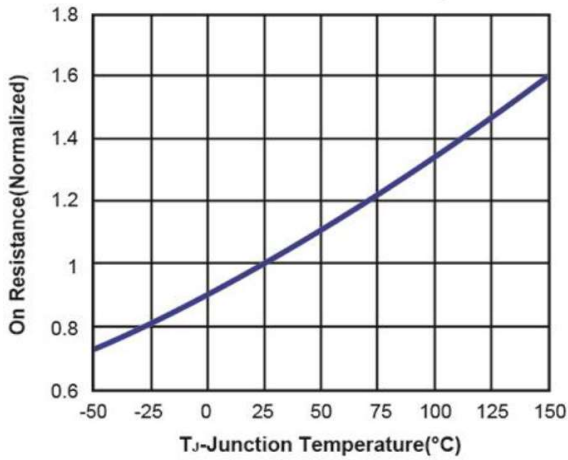


Fig. 1 On Resistance vs. Junction Temperature

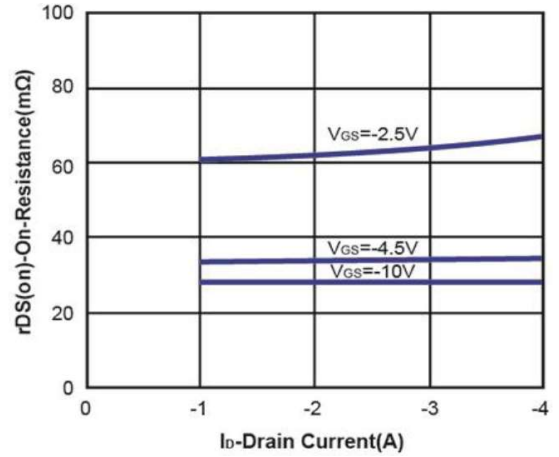


Fig. 2 On Resistance vs. Drain Current

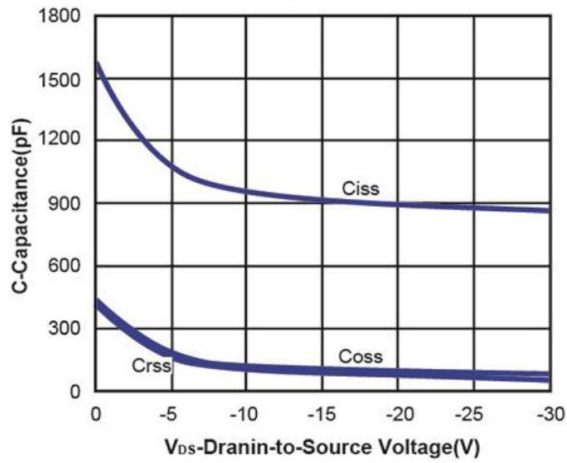


Fig. 3 Capacitance

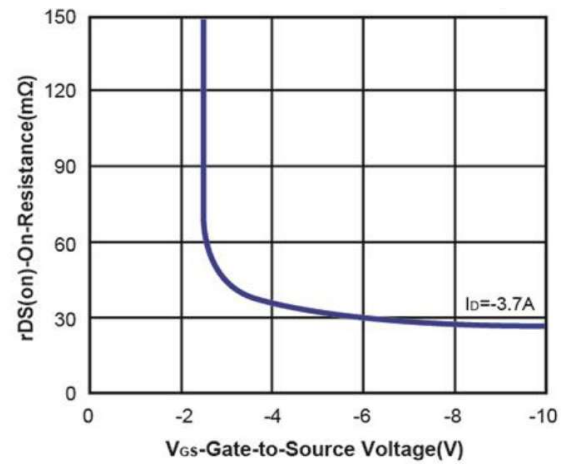


Fig. 4 On Resistance vs. Gate-Source

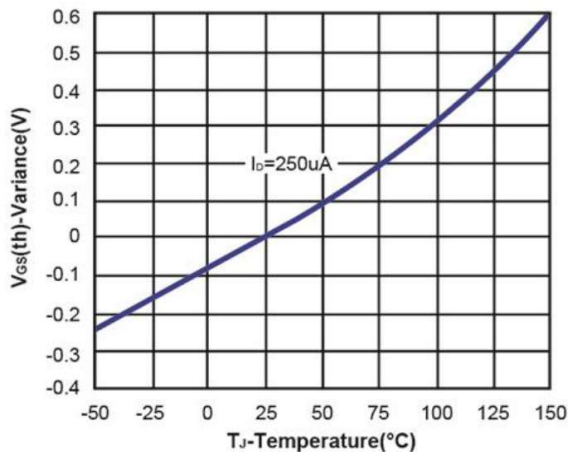


Fig. 5 Threshold Voltage vs. Junction Temperature

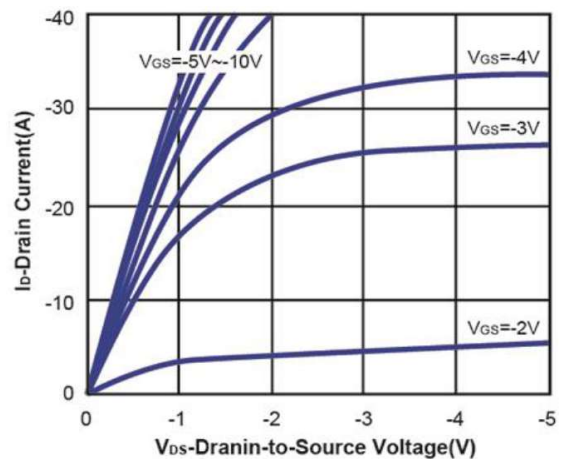


Fig. 6 On-Region Characteristics



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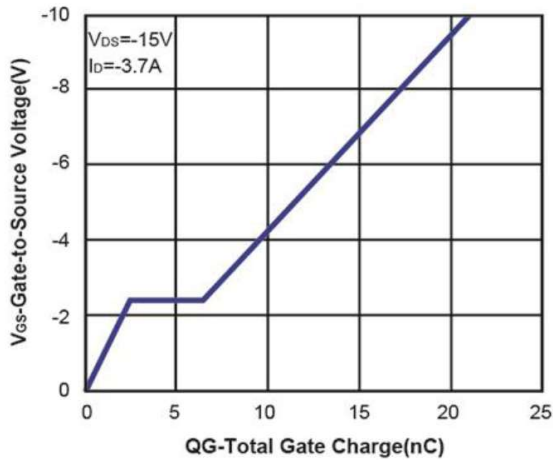


Fig. 7 Gate Charge

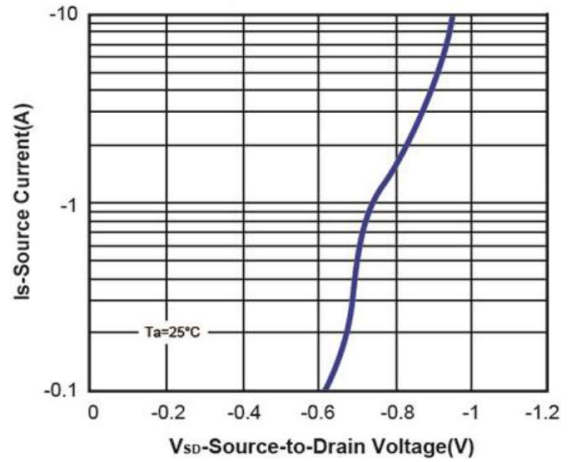


Fig. 8 Body-Diode Characteristics

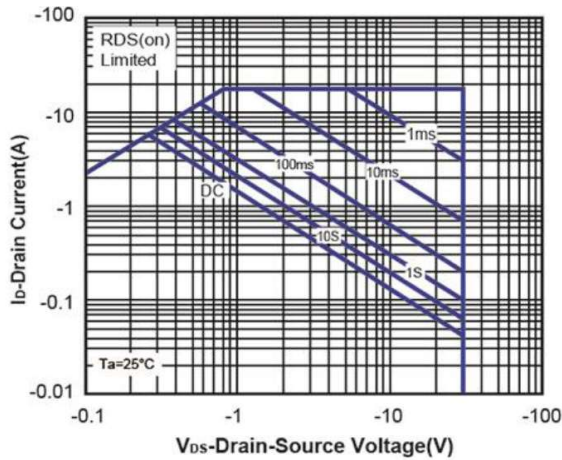


Fig. 9 Maximum Forward Biased Safe Operating Area

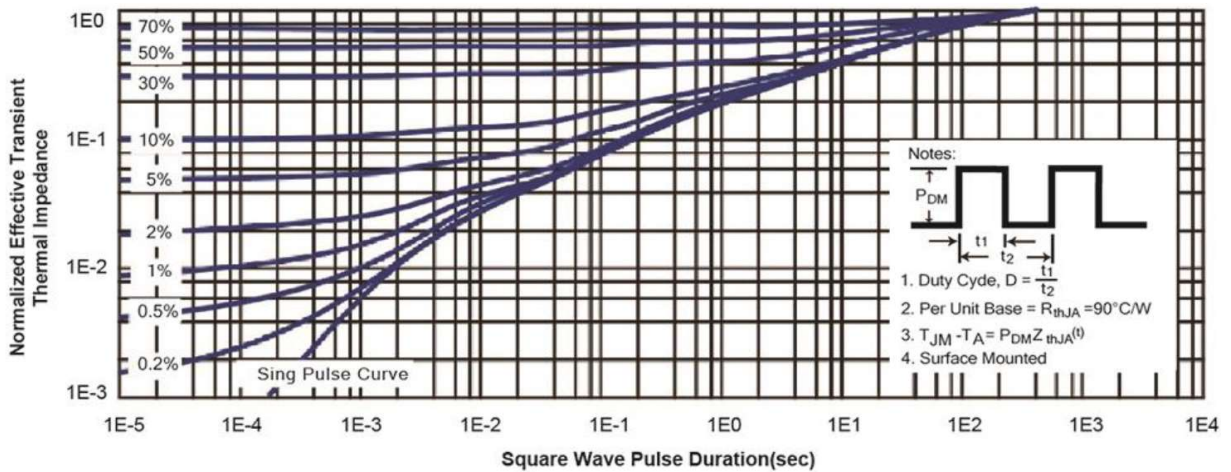


Fig. 10 Transient Thermal Response Curves

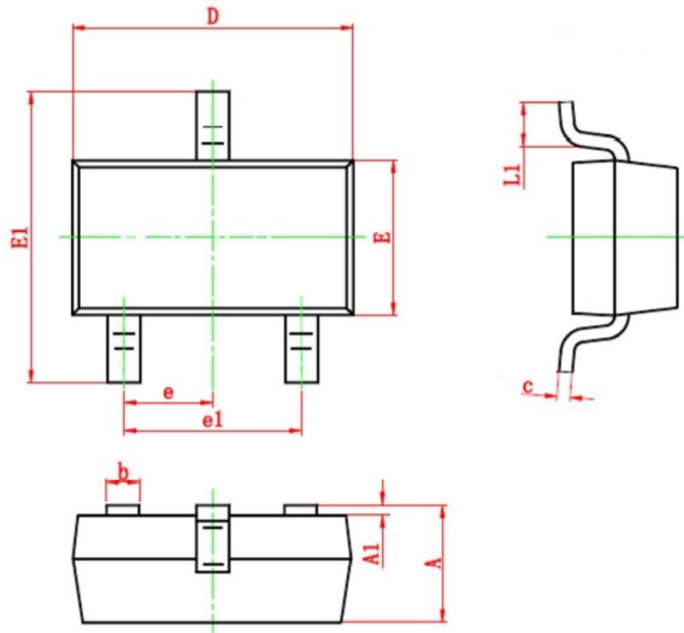


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Package Dimension

SOT-23



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.30	0.035	0.051
A1	0.00	0.15	0.000	0.006
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.05	0.110	0.120
E	1.50	1.75	0.059	0.069
E1	2.60	3.00	0.102	0.118
e	0.85	1.05	0.033	0.041
e1	1.80	2.00	0.071	0.079
L1	0.30	0.60	0.012	0.024