



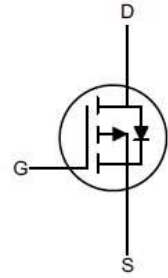
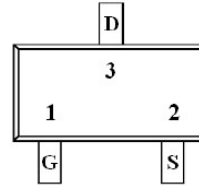
SM5410IDSH

P-Channel Enhancement Mode Field Effect Transistor

FEATURES

- $BV_{DSS} \geq -60V$, $I_D \leq -0.33A$
- $R_{DS(ON)} \leq 3.6\Omega @ V_{GS} = -10V$
- Suffix "H" indicates Halogen-free parts, ex. SM5410IDSH

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}	-60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current at $V_{GS} = -10V$ (Note 1)	I_D	$T_A = 25^\circ C$	-0.33
		$T_A = 70^\circ C$	-0.27
Pulsed Drain Current (Note 2)	I_{DM}	-1.32	A
Thermal Maximum Junction to Ambient (Note 1)	$R_{\theta JA}$	125	$^\circ C/W$
Thermal Maximum Junction to Case	$R_{\theta JC}$	80	$^\circ C/W$
Power Dissipation (Note 3)	P_D	1	W
Operating and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ C$

Note

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper. $t \leq 10SEC$
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. Power dissipation is limited by 150 $^\circ C$ junction temperature



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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}	-60	-	-	V
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.8	-1.5	-2.5	V
Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=-48V, V_{GS}=0V, T_j=25^\circ\text{C}$	I_{DSS}	-	-	-1	μA
	$V_{DS}=-48V, V_{GS}=0V, T_j=125^\circ\text{C}$		-	-	-100	
Static Drain Source On-Resistance (Note 2)	$V_{GS}=-10V, I_D=-0.33A$	$R_{DS(ON)}$	-	3.0	3.6	Ω
	$V_{GS}=-4.5V, I_D=-0.2A$		-	4.0	5.4	
Dynamic (Note 4)						
Total Gate Charge	$V_{DD}=-48V, I_{DS}=-0.33A$	Q_g	-	0.12	0.18	nC
Gate-Source Charge		Q_{gs}	-	1.10	1.65	
Gate-Drain Charge		Q_{gd}	-	2.38	3.57	
Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1\text{MHz}$	C_{iss}	-	79	-	pF
Output Capacitance		C_{oss}	-	24	-	
Reverse Transfer Capacitance		C_{rss}	-	9	-	
Turn-On Delay Time		$t_{d(on)}$	-	23	35	
Rise Time	$V_{DD}=-30V, I_D=-0.27A$ $V_{GS}=-4.5V, R_G=43\Omega$	t_r	-	71	106	
Turn-Off Delay Time		$t_{d(off)}$	-	56	70	
Fall Time		t_f	-	61	76	
Drain-Source Body Diode						
Diode Forward Voltage (Note 2)	$V_{GS}=0V, I_S=-0.1A$	V_{SD}	-	-	-1.3	V

Note

4. Guarantee by design, not test in mass production



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RATINGS AND CHARACTERISTIC CURVES

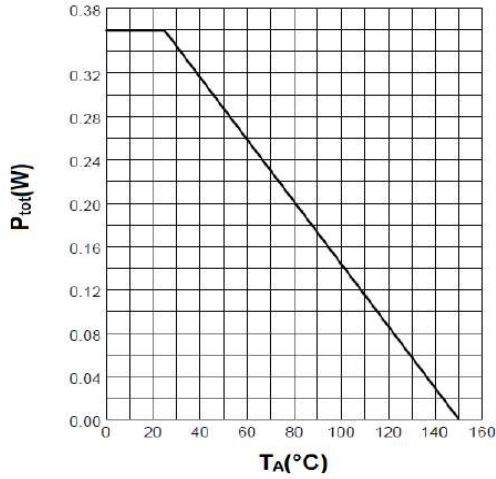


Fig.1 Power Dissipation

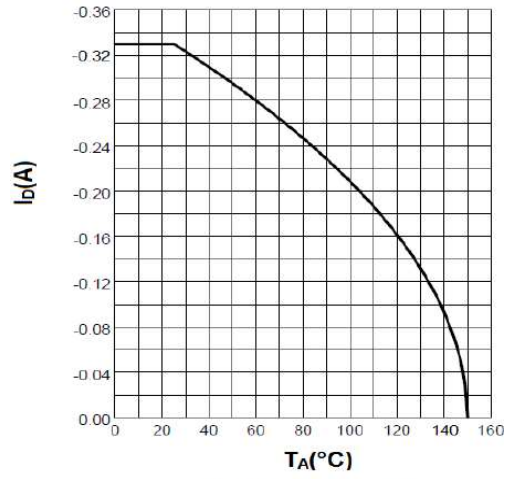


Fig.2 Drain current

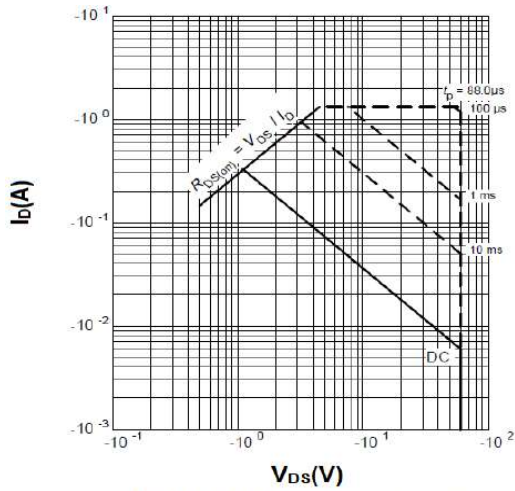


Fig.3 T Safe operating area

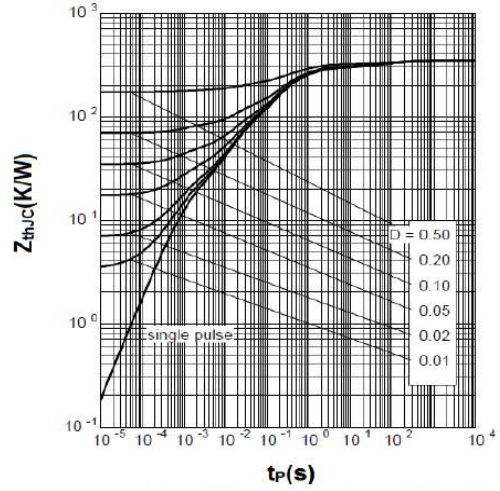


Fig.4 Transient thermal impedance

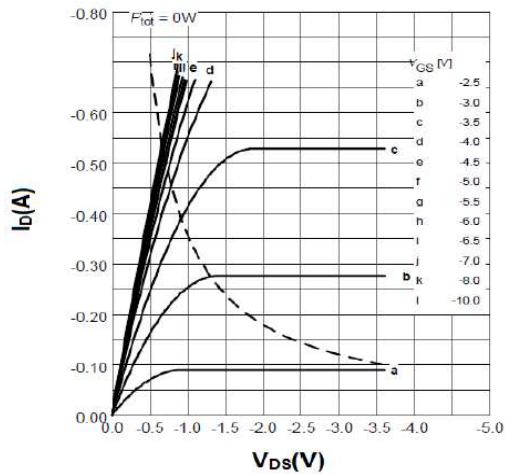


Fig.5 Output Characteristics

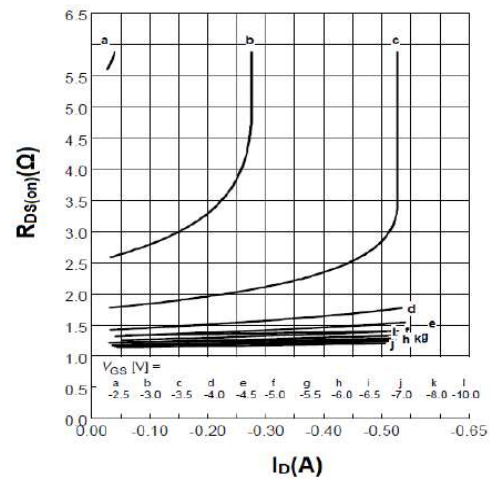


Fig.6 Drain Source On Resistance



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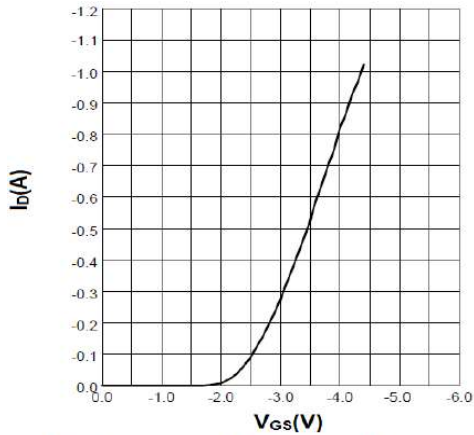


Fig.7 Transfer Characteristics

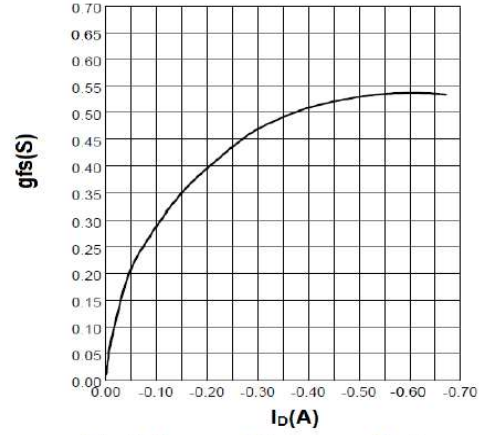


Fig.8 Forward Transconductance

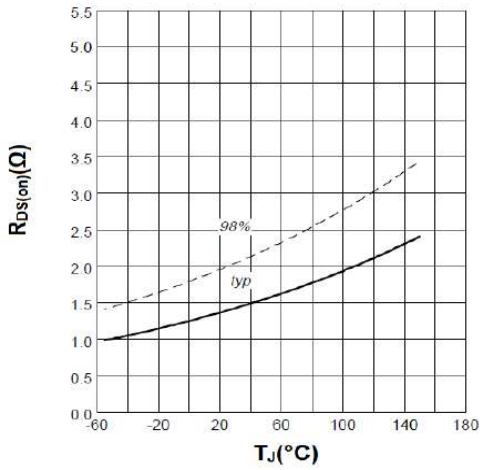


Fig.9 Drain Source On state Resistance

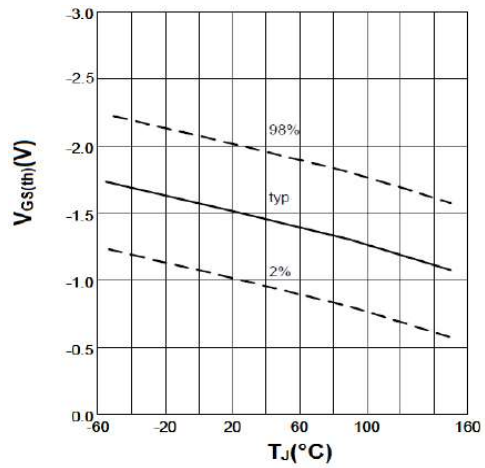


Fig.10 Gate Threshold Voltage

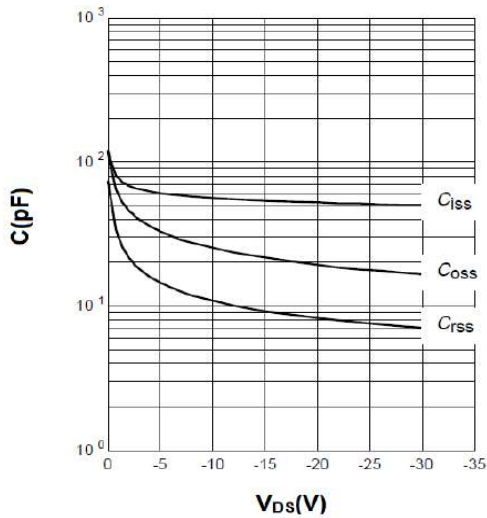


Fig.11 Capacitance

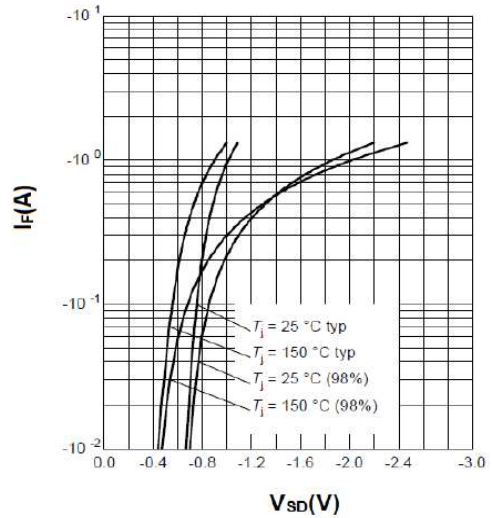


Fig.12 Forward Characteristics of Reverse Diode



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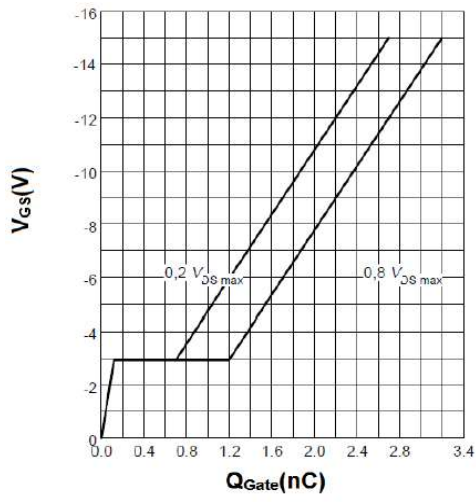


Fig.13 Gate Charge

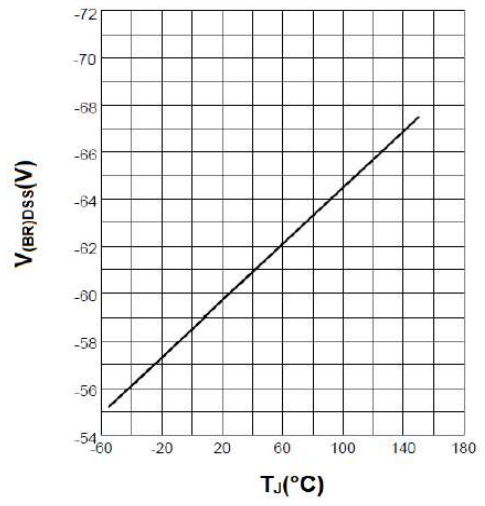


Fig.14 Drain Source Breakdown Voltage

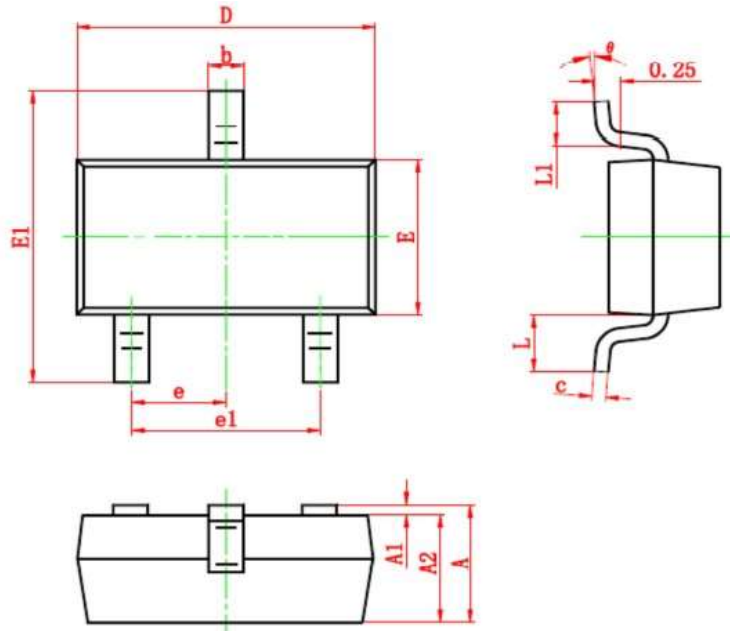


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Package Dimension

SOT-23



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.15	0.035	0.045
A1	0	0.1	0	0.004
A2	0.9	1.05	0.035	0.041
b	0.3	0.5	0.012	0.02
c	0.08	0.15	0.003	0.006
D	2.8	3	0.11	0.118
E	1.2	1.4	0.047	0.055
E1	2.25	2.55	0.089	0.1
e	TYP 0.95		TYP 0.037	
e1	1.8	2	0.071	0.079
L	REF 0.55		REF 0.022	
L1	0.3	0.5	0.012	0.02
θ	0°	8°	0°	8°