SM3415KIDSH

P-Channel Enhancement Mode Field Effect Transistor

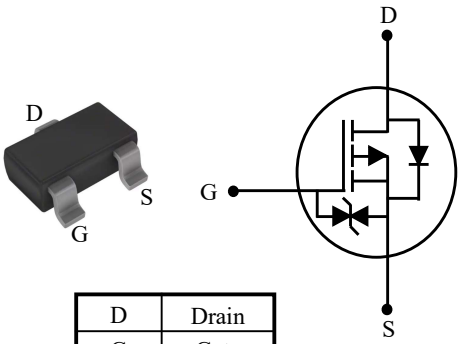
FEATURES

· $R_{DS(ON)}$=39mΩ@V_{GS}=-4.5V

· Low gate charge

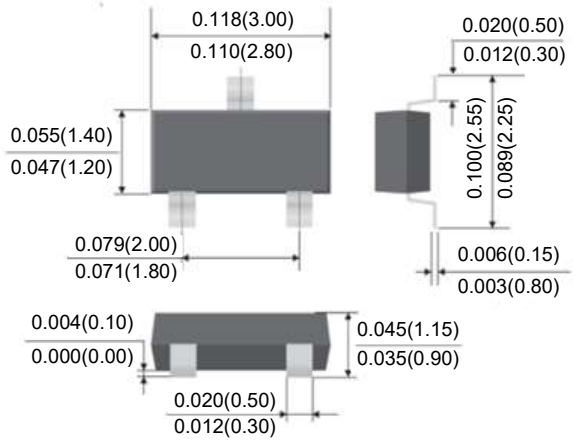
· ESD protected gate

· Suffix "H" indicates Halogen-free parts, ex. SM3415KIDSH



D	Drain
G	Gate
S	Source

SOT-23



Dimensions in inch and (millimeter)

Maximum Ratings(Note 1)

Parameter		Symbol	Value	Unit
Drain-Source Voltage	T_A=25°C	V_{DS}	-20	V
Gate-Source Voltage	T_A=25°C	V_{GS}	±8	
Continuous Drain Current (Note 2)	T_A=25°C	I_D	-4.2	A
	T_A=70°C		-3.3	
Pulsed Drain Current (Note 3)	T_A=25℃	I_{DM}	-10.5	A
Power Dissipation (Note 4)	T_A=25℃	P_D	1.00	W
	T_C=25℃		1.56	
Thermal Maximum Junction to Ambient (Note 3)		$R_{\theta JA}$	125	℃/W
Thermal Maximum Junction to Case		$R_{\theta JC}$	80	℃/W
Operating Junction and Storage Temperature Range		T_J ,T_{stg}	- 55 to + 150	℃

Note:

1. T_A=25°C. Exposure to absolute maximum rating conditions for extended periods may remain possibility to affect device reliability

2. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

3. The data tested by pulsed , pulse width≦300us , duty cycle≦2%

4. Power dissipation is limited by 150°C junction temperature.

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Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	$V_{(BR)DSS}$	-20	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	$V_{GS(th)}$	-0.30	-0.55	-0.90	V
Gate Leakage Current	V_{DS}=0V, V_{GS}=±8V	I_{GSS}	-	-	±10	μA
Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V	I_{DSS}	-	-	-1	μA
Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-4.0A	$R_{DS(on)}$	-	32	39	mΩ
	V_{GS}=-2.5V, I_D=-4.0A		-	39	51	
	V_{GS}=-1.8V, I_D=-2.0A		-	50	64	
Diode Forward Voltage (Note 3)	V_{GS}=0V, I_S=-1A	V_{SD}	-	-0.85	-1.10	V
Forward Transconductance	V_{DS}=-5V, I_D=-4A	g_{FS}	-	11	-	S
Dynamic (Note 5)						
Total Gate Charge	V_{DS}=-10V, V_{GS}=-2.5V, I_D=-4A	Q_g	-	5.1	-	nC
	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A		-	6.8	-	
Gate-Source Charge		Q_{gs}	-	1.9	-	
Gate-Drain Charge		Q_{gd}	-	2.2	-	
Input Capacitance	V_{DS}=-10V, V_{GS}=0V, f=1MHz	C_{iss}	-	1029	-	pF
Output Capacitance		C_{oss}	-	102	-	
Reverse Transfer Capacitance		C_{rss}	-	79	-	
Turn on Delay Time	V_{DS}=-10V, R_{GEN}=3Ω I_D=-4A, V_{GS}=-4.5V	$t_{d(on)}$	-	10	-	ns
Turn on Rise Time		t_r	-	30	-	
Turn off Delay Time		$t_{d(off)}$	-	55	-	
Turn off Fall Time		t_f	-	15	-	

Note:

5. Guarantee by design, not test in mass production

RATINGS AND CHARACTERISTIC CURVES

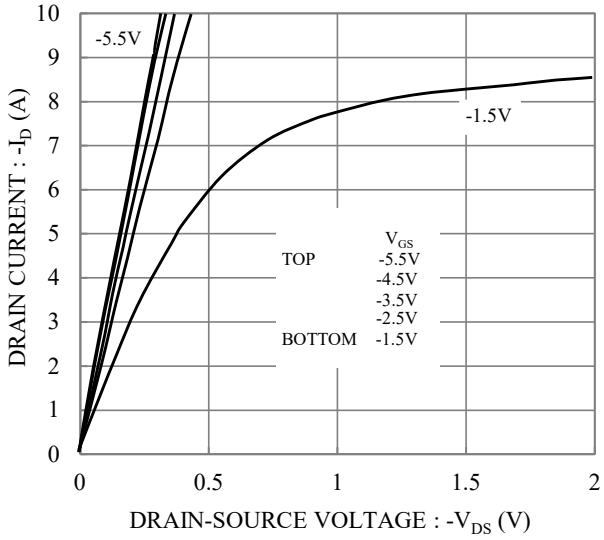


Fig.1 Typical Output Characteristics

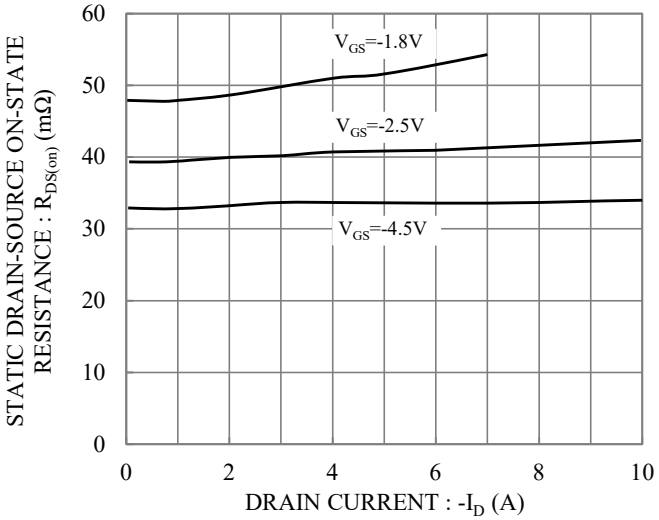


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

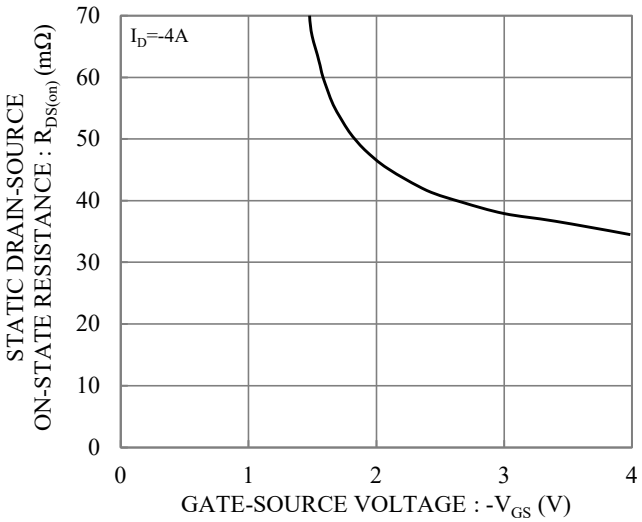


Fig.3 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

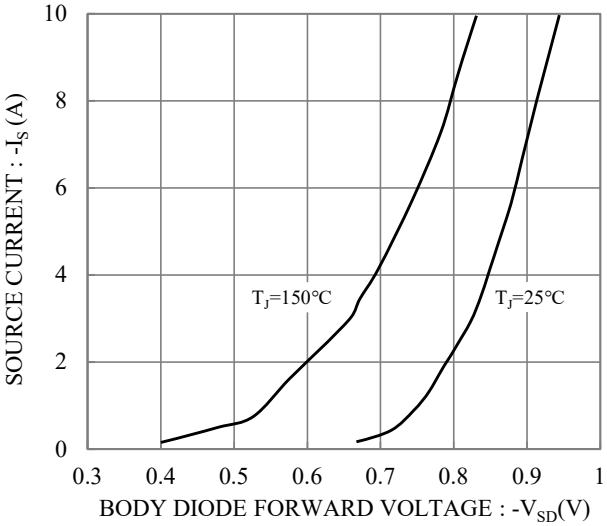


Fig.4 Body Diode Forward Voltage vs. Source Current

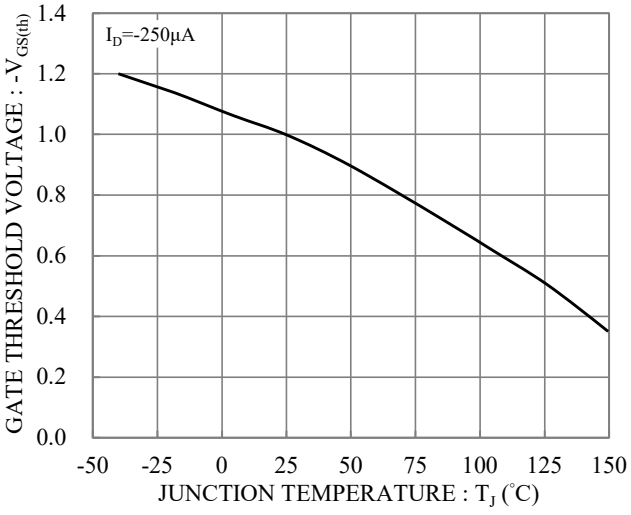


Fig.5 Gate Threshold Voltage vs. Junction Temperature

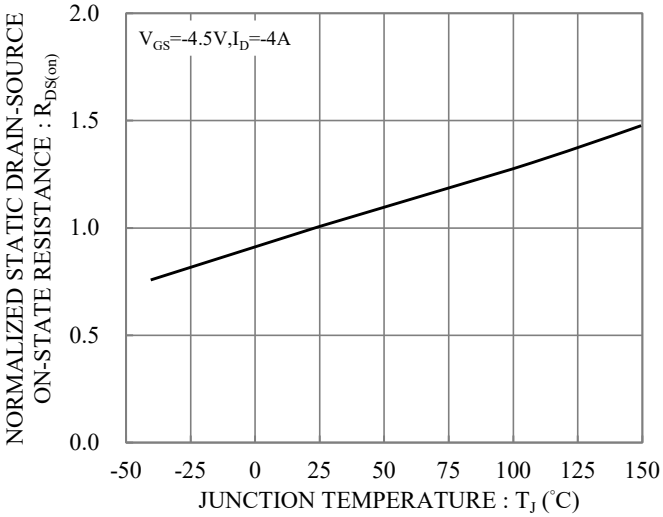


Fig.6 Drain-Source On-State Resistance vs. Junction Tempearture

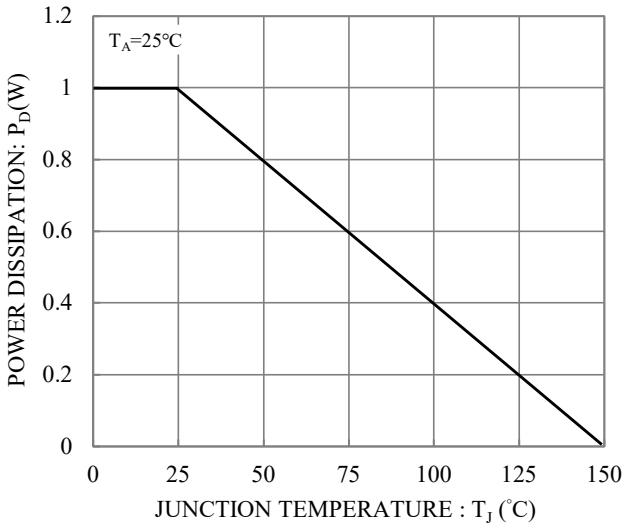


Fig.7 Power Dissipation

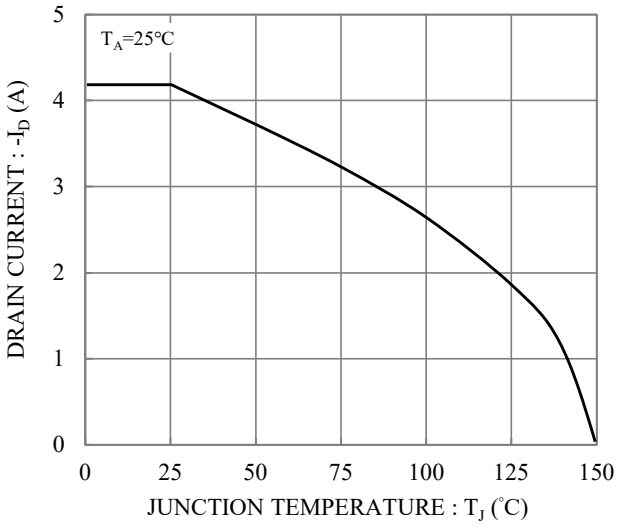


Fig.8 Drain Current

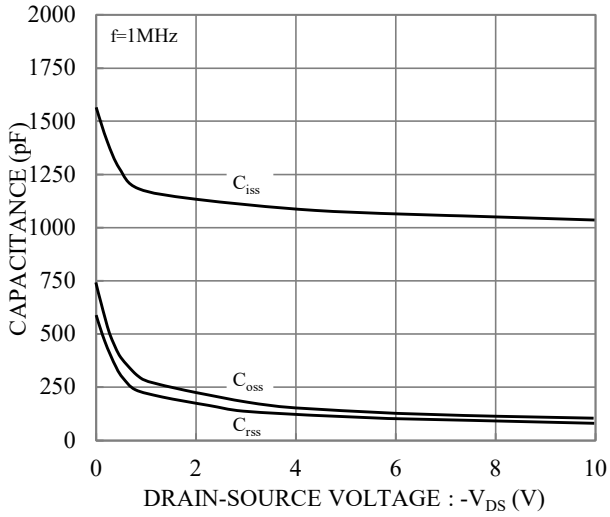


Fig.9 Capacitance vs Drain-Source Voltage

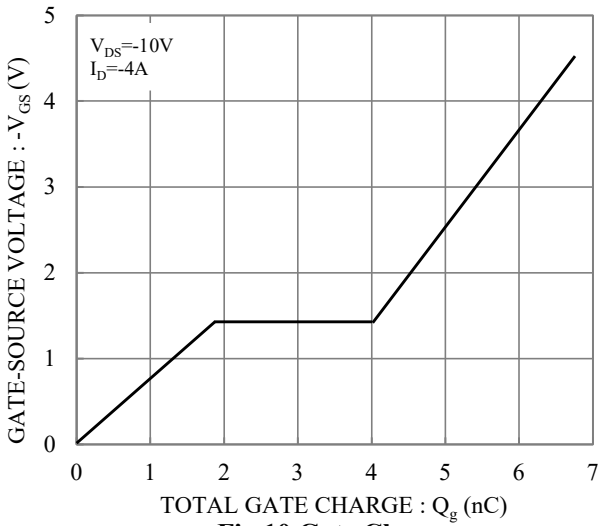


Fig.10 Gate Charge

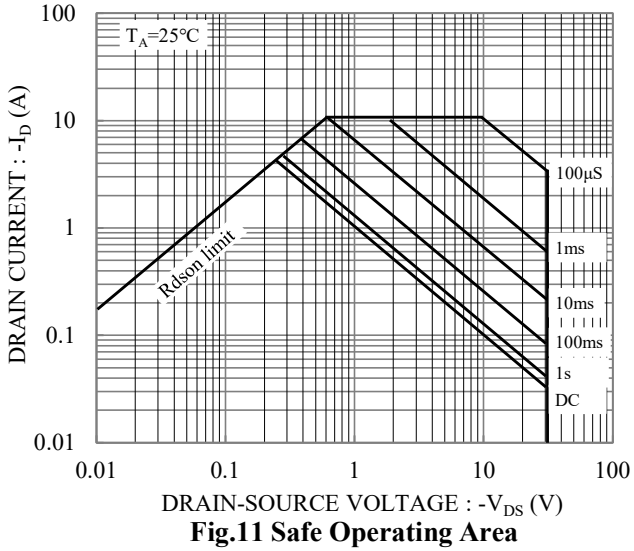
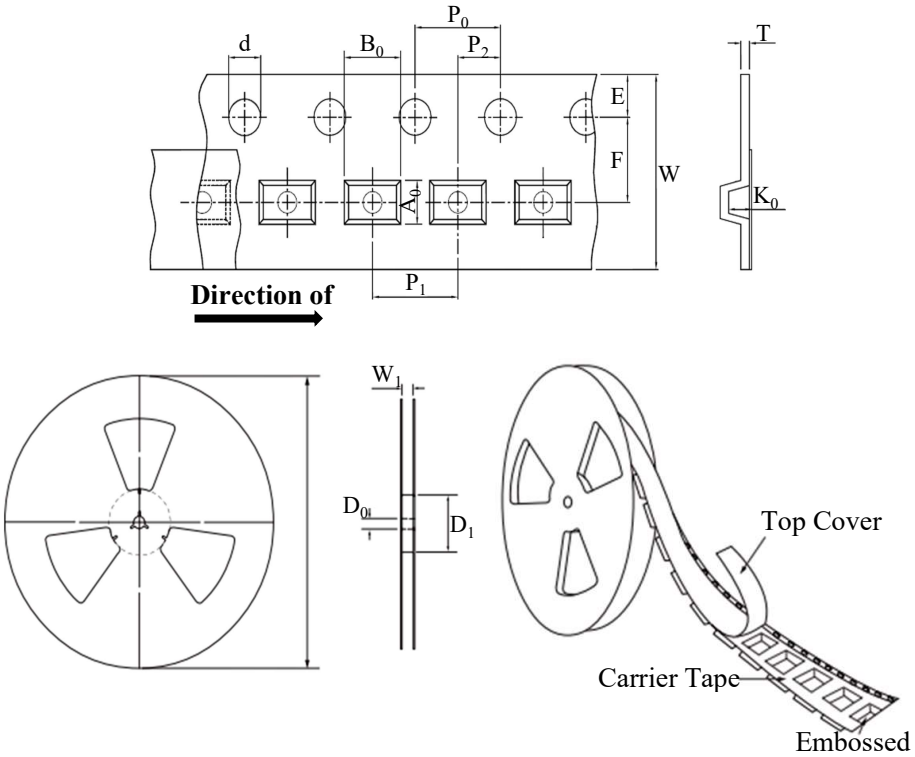


Fig.11 Safe Operating Area

TAPE & REEL SPECIFICATION



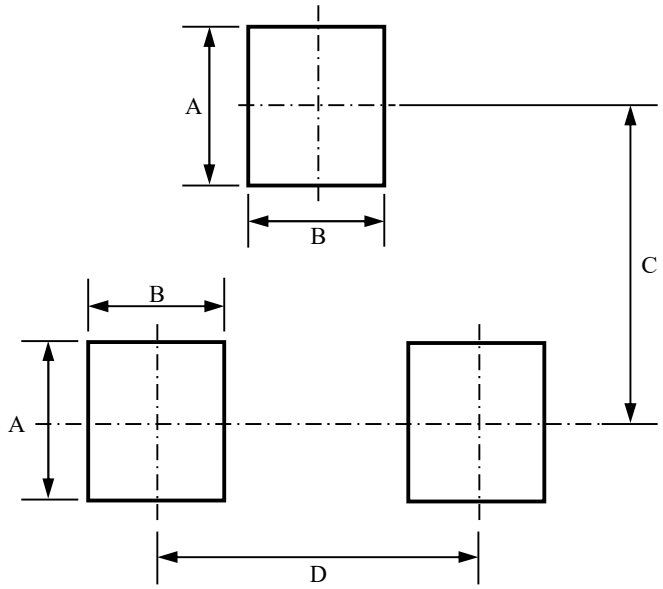
Item	Symbol	SOT-23
Carrier width	A_0	3.30 ± 0.10
Carrier length	B_0	3.00 ± 0.10
Carrier depth	K_0	1.70 ± 0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D_0	13.00 ± 0.50
Reel inner diameter	D_1	MIN. 50.00
Sprocke hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocke hole pitch	P_0	4.00 ± 0.10
Punch hole pitch	P_1	4.00 ± 0.10
Embossment center	P_2	2.00 ± 0.10
Overall tape thickness	T	0.20 ± 0.05
Tape width	W	8.00 ± 0.20
Reel width	W1	MAX. 14.50

MARKING CODE

Part Number	Marking Code
SM3415KIDSH	NM□□
	0 1 □□

□□ ========>Date Code

SUGGESTED SOLDER PAD LAYOUT



Unit :mm

PACKAGE	A	B	C	D
SOT-23	0.80	0.60	2.02	1.90