



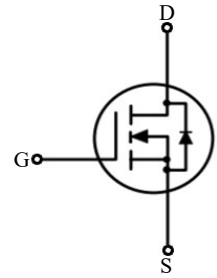
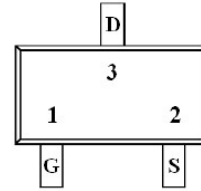
SM2306FDS

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- $R_{DS(ON)} \leq 34.5m\Omega @ V_{GS}=10V$
- Suffix "H" indicates Halogen-free parts, ex. SM2306FDSH

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	$T_A=25^\circ C$	5.3	A
		$T_A=70^\circ C$	4.3	A
Pulsed Drain Current	I_{DM}	21.5	A	
Maximum Power Dissipation	P_D	$T_A=25^\circ C$	1.3	W
		$T_A=70^\circ C$	0.8	W
Thermal Resistance Junction to Ambient (Note 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	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.7	-	1.4	V
Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	-	-	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Static Drain Source On-Resistance (Note 2)	$V_{GS}=10V, I_D=4A$	$R_{DS(ON)}$	-	27.0	34.5	m Ω
	$V_{GS}=4.5V, I_D=3.5A$		-	29.0	38.0	
	$V_{GS}=2.5V, I_D=2.8A$		-	39.0	50.0	
Dynamic						
Gate Resistance	$f=1MHz$	R_g	-	0.9	-	Ω
Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=4A$	Q_g	-	17.0	-	nC
Gate-Source Charge		Q_{gs}	-	2.5	-	
Gate-Drain Charge		Q_{gd}	-	2.0	-	
Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	C_{iss}	-	647.0	-	pF
Output Capacitance		C_{oss}	-	61.0	-	
Reverse Transfer Capacitance		C_{rss}	-	48.3	-	
Turn-On Delay Time	$V_{DD}=15V, I_D=1A, V_{GEN}=10V, R_G=6\Omega, R_L=15\Omega$	$t_{d(on)}$	-	8.6	-	ns
Rise Time		t_r	-	12.3	-	
Turn-Off Delay Time		$t_{d(off)}$	-	36.3	-	
Fall Time		t_f	-	5.9	-	
Drain-Source Body Diode						
Diode Forward Voltage	$V_{GS}=0V, I_S=1.25A$	V_{SD}	-	0.8	1.2	V

Note :

- Pulse test: pulse width $\leq 380\mu s$, duty cycle $\leq 2\%$.
- SMG reserves the right to improve product design, functions and reliability without notice.



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RATINGS AND CHARACTERISTIC CURVES

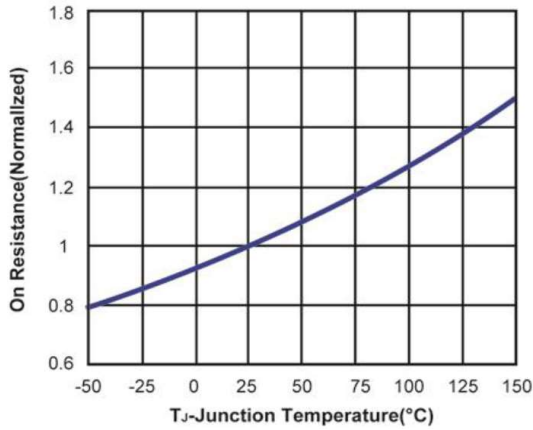


Fig. 1 On Resistance vs. Junction Temperature

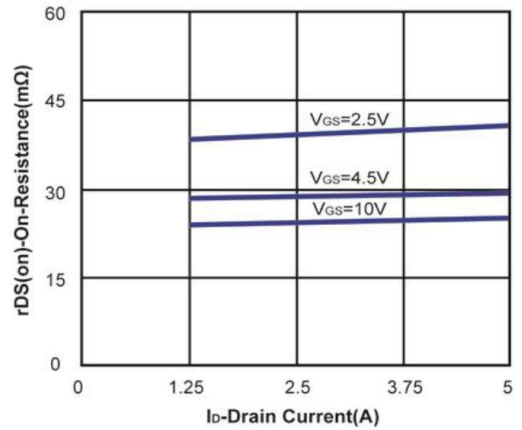


Fig. 2 On Resistance vs. Drain Current

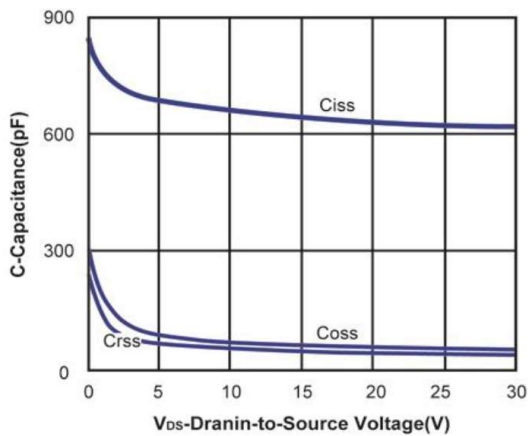


Fig. 3 Capacitance

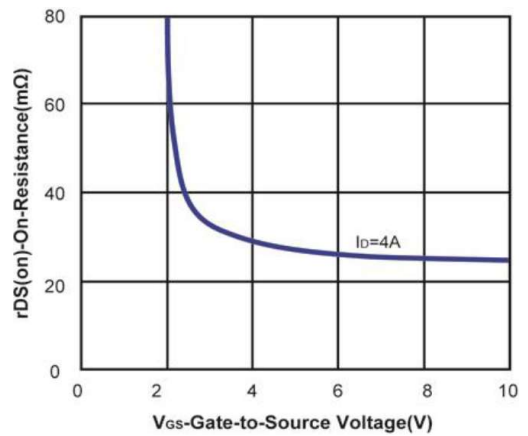


Fig. 4 On Resistance vs. Gate-Source

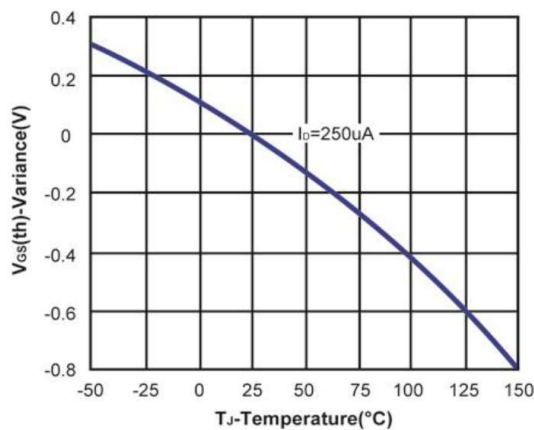


Fig. 5 Threshold Voltage vs. Junction Temperature

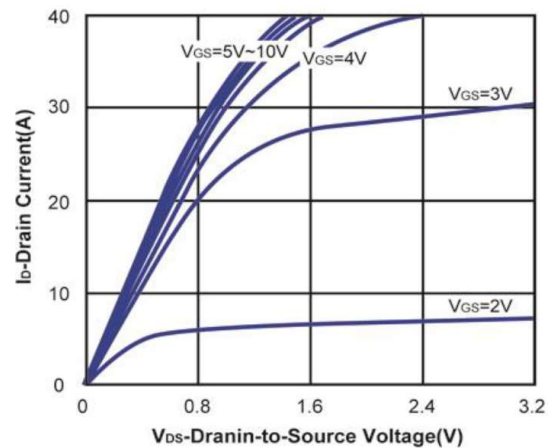


Fig. 6 On-Region Characteristics



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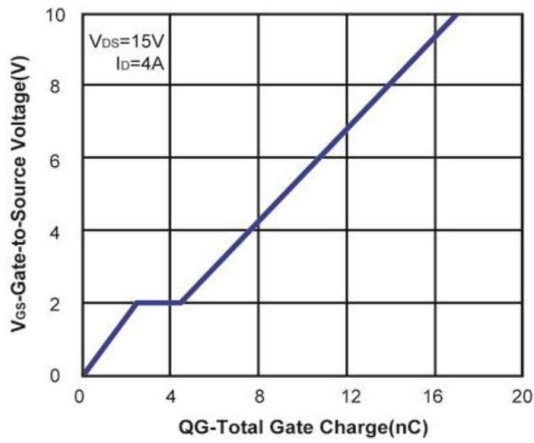


Fig. 7 Gate Charge

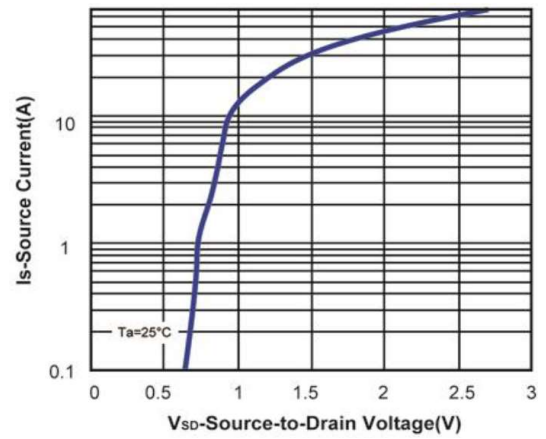


Fig. 8 Body-Diode Characteristics

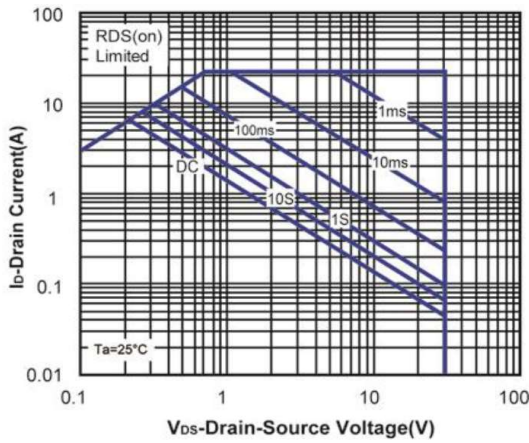


Fig. 9 Maximum Forward Biased Safe Operating Area

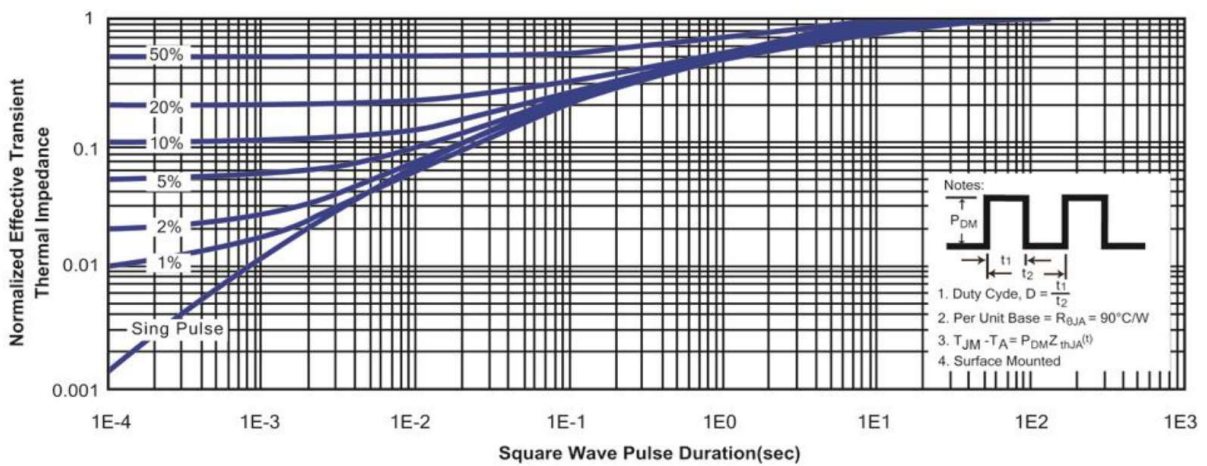


Fig. 10 Transient Thermal Response Curves

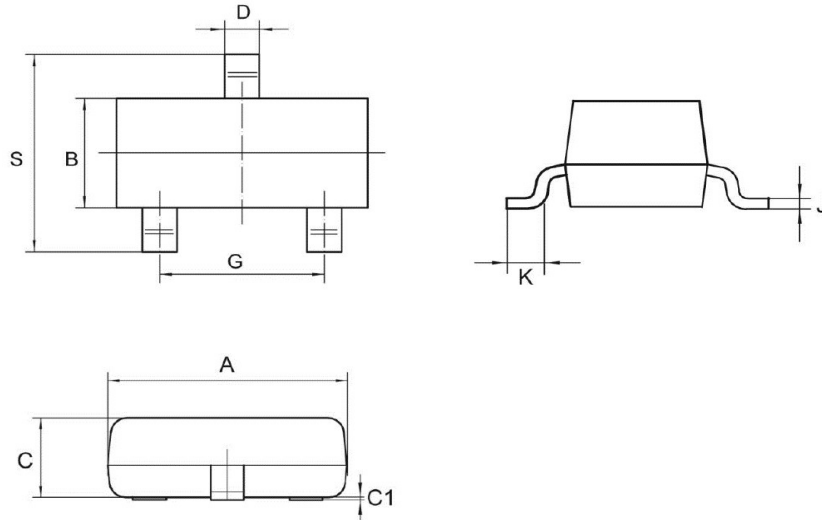


SM2306FDS

N-Channel Enhancement Mode Field Effect Transistor

Package Dimension

SOT-23



Symbol	MILLIMETERS	
	MIN	MAX
A	2.8	3.0
B	1.2	1.4
C	0.9	1.1
C1	-	0.1
D	0.3	0.5
G	1.90 REF	
J	0.05	0.15
K	0.2	-
S	2.2	2.6

MARKING CODE

Part Number	Marking Code
SM2306FDS	WFASG4E

WFASG is SM2306FDSH.

"WFAS" shown on the 1st~4th position on =====> SM2306FDS

"G" shown on the 5th position on =====> Green product-Halogen free

D/C :

4E is the sequence of "0-9" & "A~Z"

0~9 shown on the 6th position on ---2010~2019

A~Z shown on the 6th position on ---2020~2045

A~Z shown on the 7th position on ---1week~26week

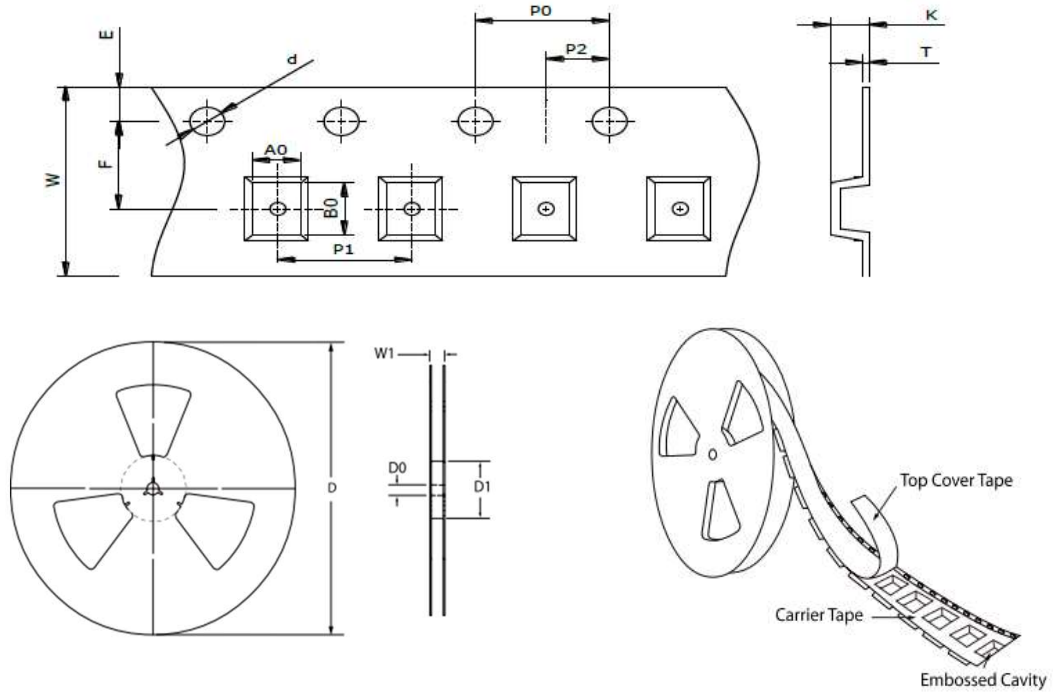
A~Z shown on the 7th position on ---27week~52week



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TAPE & REEL SPECIFICATION



Item	Symbol	SOT-23
Carrier width	A ₀	3.20 ± 0.10
Carrier length	B ₀	2.90 ± 0.10
Carrier depth	K	1.50 ± 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
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocket 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

ORDER INFORMATION

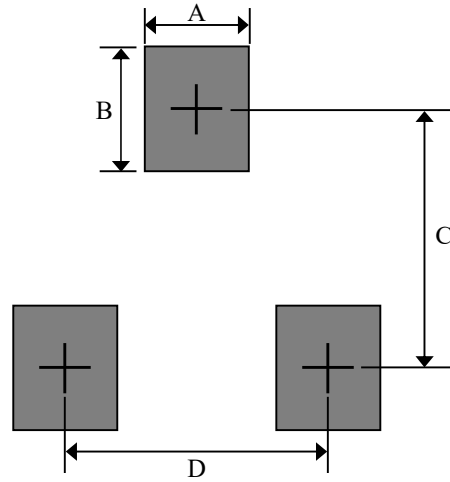
Package	Reel Size	Quantity
SOT-23	7"	3,000



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SUGGESTED SOLDER PAD LAYOUT



Unit : mm

PACKAGE	A	B	C	D
SOT-23	0.80	1.00	2.40	1.90