FMS2307S

List

FMS2307S

30V P-Channel Enhancement Mode MOSFET

Features

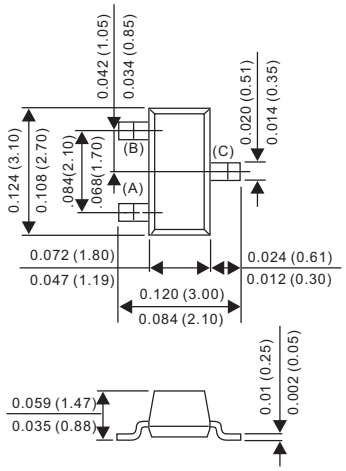
- $R_{DS(ON)}$ ≦130mΩ@V_{GS}=-10V
- $R_{DS(ON)}$ ≦200mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- In compliance with EU RoHS 2002/95/EC directives.
- Suffix "-H" indicates Halogen-free part, ex.FMS2307S-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Package outline

SOT-23



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER		CONDITIONS	Symbol	Limit		UNIT
Drain-source voltage			V_{DSS}	-30		V
Drain current-continue	T_A = 25°C		I_D	-2.0		A
	T_A = 70°C			-1.6		
-pulsed			I_{DM}	-8.0		
Gate- source voltage-continue			V_{GS}	±20		V
Maximum power dissipation	T_A = 25°C		P_D	0.78		W
	T_A = 70°C			0.5		
Thermal resistance-junction to ambient*			$R_{\theta JA}$	Typical	Maximum	°C/W
				110	160	
Operation junction temperature			T_J	-55 to +150		°C
Storage temperature			T_{STG}	-65 to +175		°C

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

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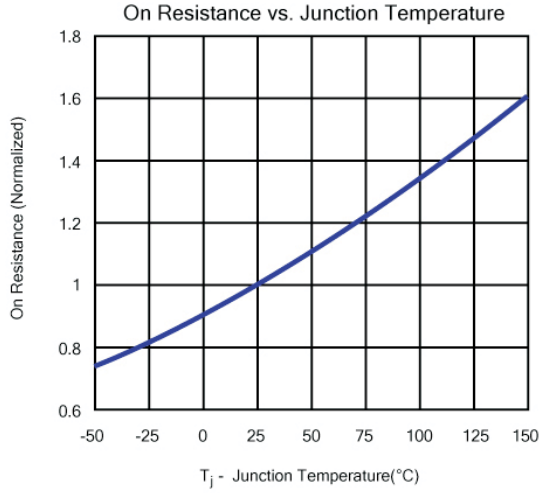
Electrical characteristics (At T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
STATIC						
Drain-source breakdown voltage	V_{GS} = 0V, I_D= -250uA	BV_{DSS}	-30			V
Zero gate voltage drain current	V_{DS} = -30V, V_{GS} = 0V, T_J = 25°C	I_{DSS}			-1.0	μA
Gate-body leakage current-forward	V_{GS} = 20V, V_{DS}=0	I_{GSSF}			100	nA
Gate-body leakage current-reverse	V_{GS} = -20V, V_{DS}=0	I_{GSSR}			-100	nA
Gate threshold voltage	V_{DS} = V_{GS}, I_D = -250uA	$V_{GS(th)}$	-1.0		-3.0	V
Static drain-source on-resistance[a]	V_{GS} = -10V, I_D = -2.0A V_{GS} = -4.5V, I_D= -1.6A	$R_{DS(ON)}$		110 160	130 200	mΩ
Diode Forward Voltage	V_{GS} =0V, I_S = -1.0A, T_J =25°C	V_{SD}		-0.85	-1.2	V
DYNAMIC						
Intput capacitance	V_{DS} = -15V, V_{GS} = 0V, f=1.0MHz	C_{iss}		205		pF
Output capacitance		C_{oss}		42		
Reverse transfer capacitance		C_{rss}		13		
Total gate charge	V_{DS} = -15V, I_D = -2.0A V_{GS}=-10V	Q_g		8.0		nC
Total gate charge	V_{DS} = -15V, I_D = -2.0A V_{GS}=-4.5V	Q_g		3.7		
Gate-source charge		Q_{gs}		2.0		
Gate-drain charge		Q_{gd}		1.0		
Gate resistance	V_{DS} = 0V,V_{GS}=0V,f=1MHz	R_g		7.5		Ω
Turn-On Delay Time	V_{DS} = -15V,R_L=15Ω, R_{GEN}=6Ω V_{GS}=-4.5V	$t_{d(on)}$		18		ns
		t_r		16		
Turn-Off Delay Time		$t_{d(off)}$		32		
		t_f		8		

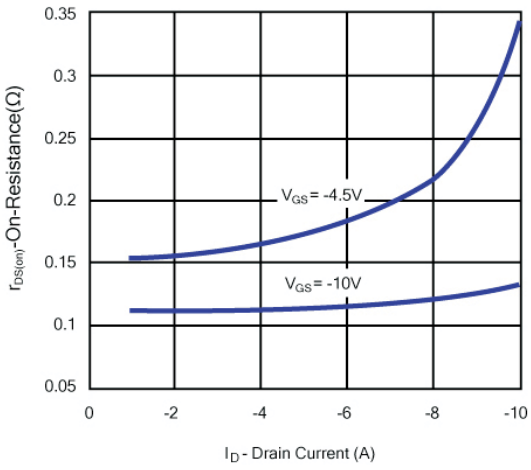
Notes: a. Pulse test; pulse width ≦ 300us, duty cycle≦ 2%

Rating and characteristic curves (FMS2307S)

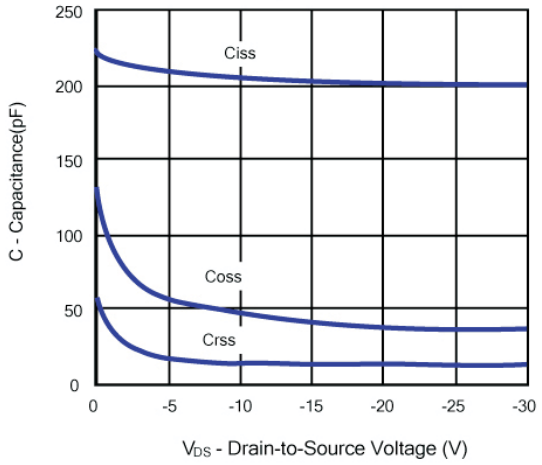
On Resistance vs. Junction Temperature



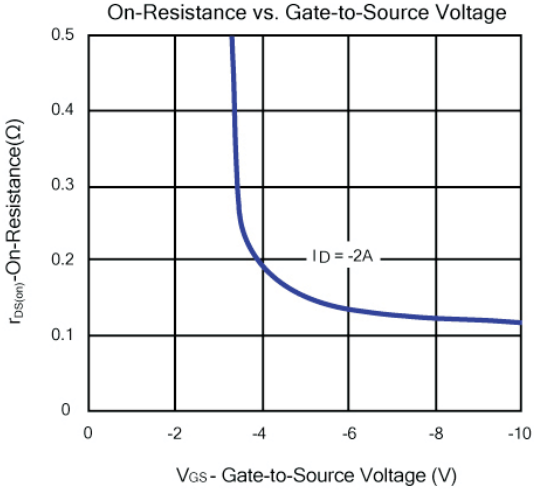
On-Resistance vs. Drain Current



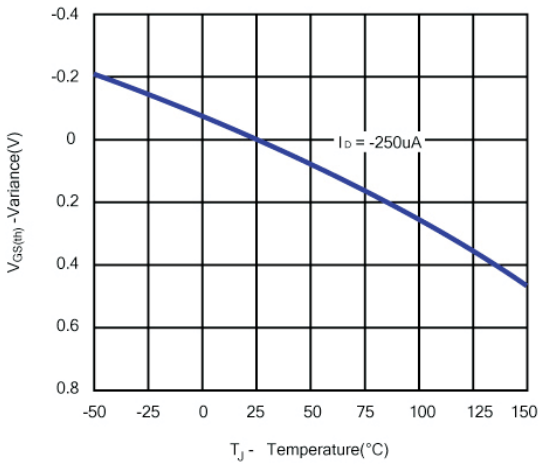
Capacitance



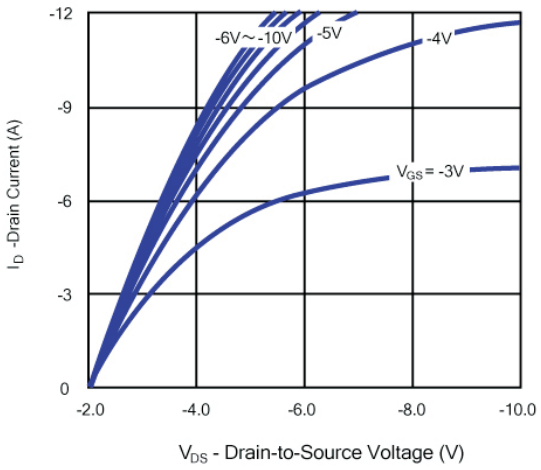
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

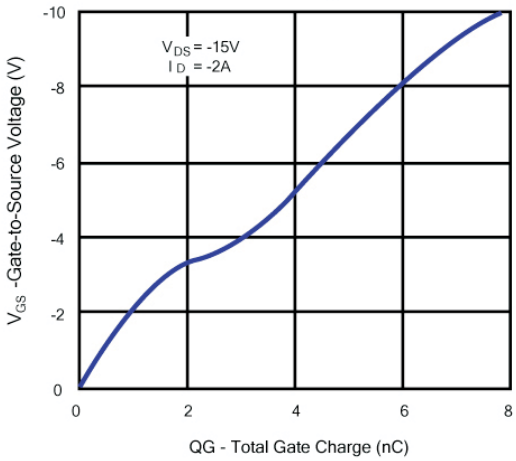


On-Region Characteristics

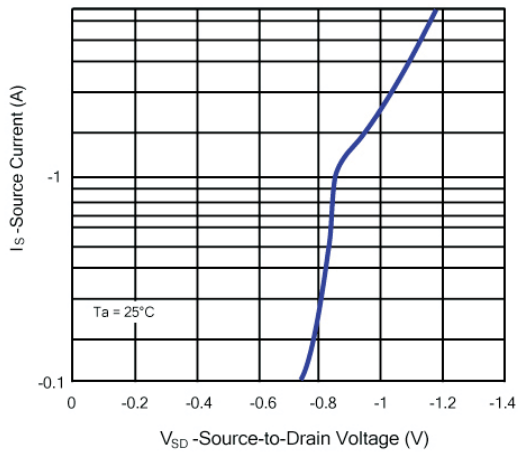


Rating and characteristic curves (FMS2307S)

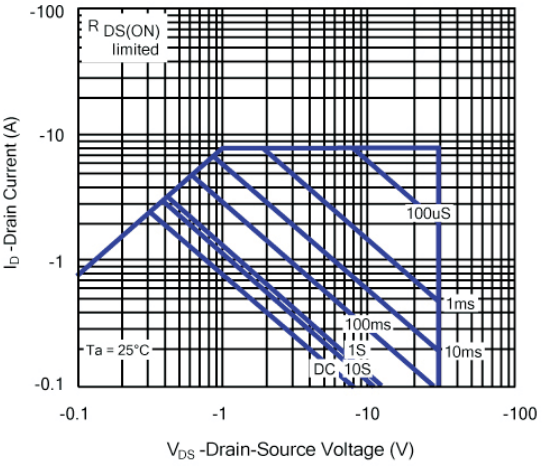
Gate Charge



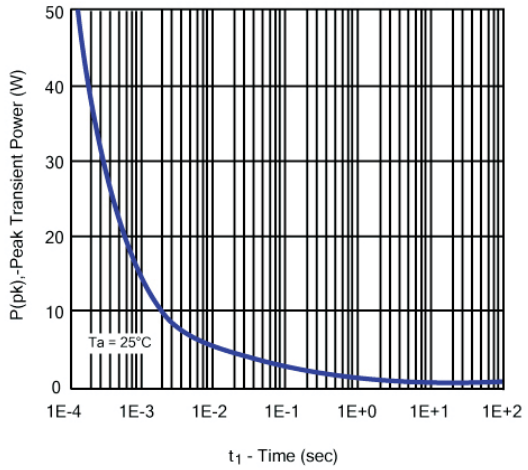
Source to Drain Diode Forward Voltage



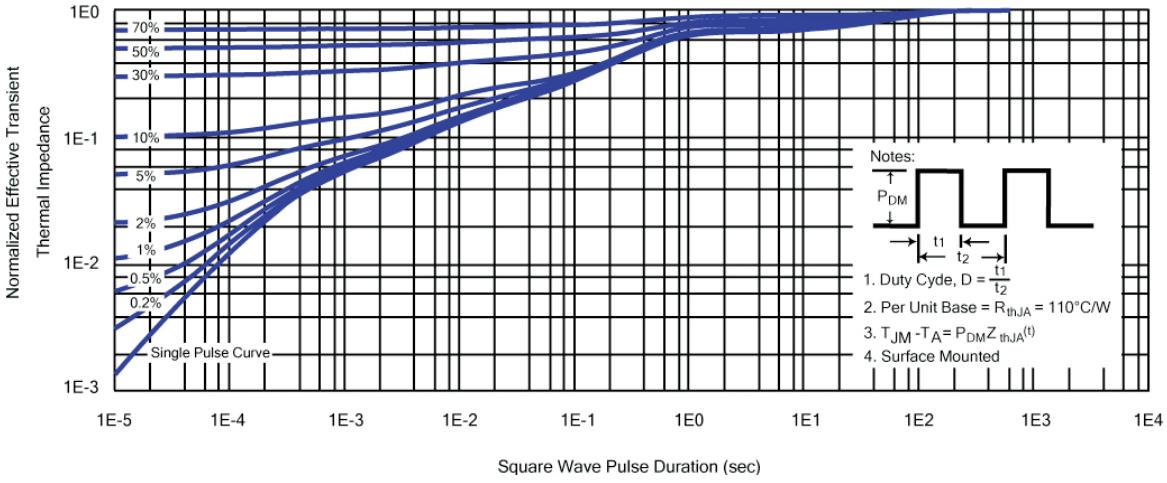
Maximum Forward Biased Safe Operating Area



Single Pulse Maximum Power Dissipation



Normalized Thermal Transient Impedance, Junction-to-Ambient



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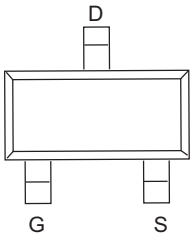
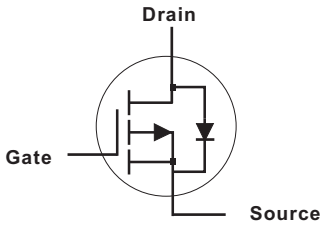
Pinning information

Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

Type number	Marking code
FMS2307S	WGSG0A (Note 1)

Note: 1.
P/N :
"WGSG" is FMS2307S-H
"WGS" shown on the 1st~3rd position on --- FMS2307S
"G" shown on the 4th position on --- Green product-Halogen free
D/C :
0A is the sequence of "0-9" & "A~Z"
0~9 shown on the 5th position on ---2010~2019
A~Z shown on the6th position on ---1week~26week
A~Z shown on the 6th position on ---27week~52week

Suggested solder pad layout

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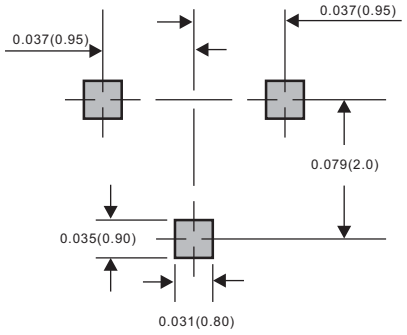

Dimensions in inches and (millimeters)

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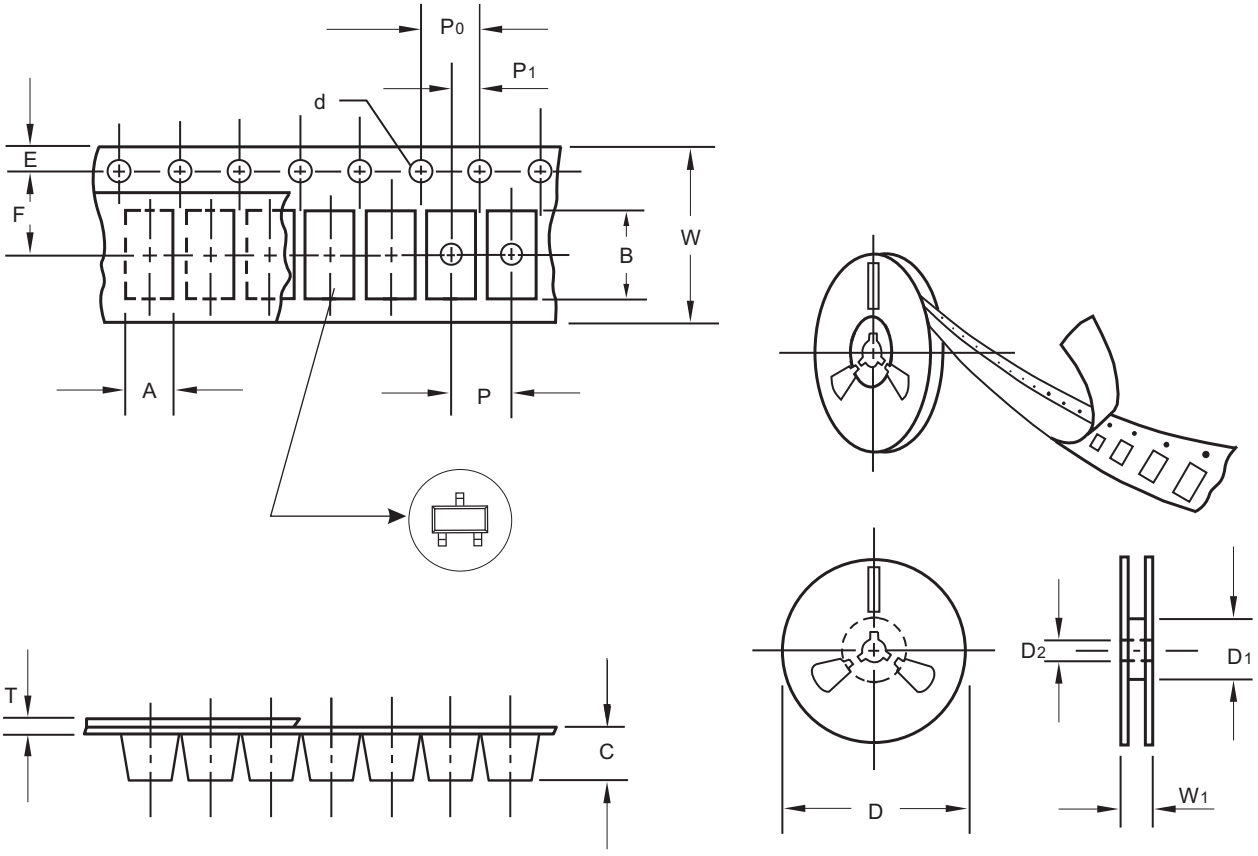
Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	55.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	12.0

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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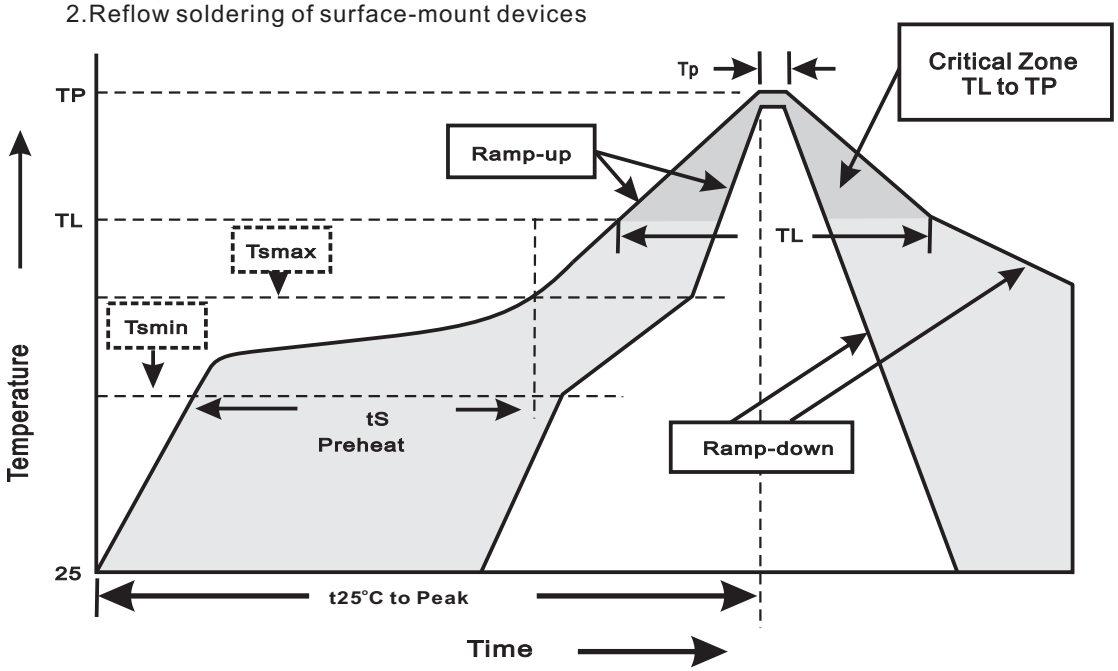
Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3000	4.0	30,000	183*183*123	178	383*262*387	240,000	11.6

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%

2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes