FMS2303

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Formosa MS

FMS2303

30V P-Channel Enhancement Mode MOSFET

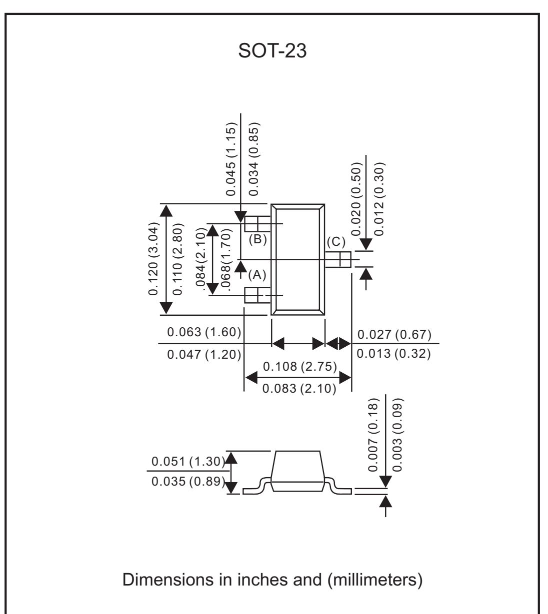
Features

- $R_{DS(ON)}$ ≦75mΩ@V_{GS}=-10V
- $R_{DS(ON)}$ ≦100mΩ@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.FMS2303-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



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	-3.2	A
	T_A = 70°C			-2.6	
-pulsed			I_{DM}	-13	
Gate- source voltage-continue			V_{GS}	±20	V
Maximum power dissipation	T_A = 25°C		P_D	1.3	W
	T_A = 70°C			0.8	
Thermal resistance-junction to ambient*			$R_{\theta JA}$	100	°C/W
Operation junction temperature			T_J	-55 to +150	°C
Storage temperature			T_{STG}	-65 to +150	°C

* The device mounted on 1in^2 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 = -1.7A V_{GS} = -4.5V, I_D= -1.3A	$R_{DS(ON)}$		60 75	75 100	mΩ
Diode Forward Voltage	V_{GS} =0V, I_S = -1.25A, T_J =25°C	V_{SD}		-0.7	-1.4	V
DYNAMIC						
Intput capacitance	V_{DS} = -15V, V_{GS} = 0V, f=1.0MHz	C_{iss}		464		pF
Output capacitance		C_{oss}		72		
Reverse transfer capacitance		C_{rss}		23		
Total gate charge	V_{DS} = -15V, I_D = -1.7A V_{GS}=-10.0V	Q_g		14.4		nC
Gate-source charge		Q_{gs}		2.7		
Gate-drain charge		Q_{gd}		3.6		
Turn-On Delay Time	V_{DS} = -15V,R_L=15Ω, R_{GEN}=6Ω V_{GS}=-10V	$T_{d(on)}$		32		ns
		T_r		17		
Turn-Off Delay Time		$T_{d(off)}$		40		
		T_f		5		

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

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Rating and characteristic curves (FMS2303)

On Resistance vs. Junction Temperature

On-Resistance vs. Drain Current

Capacitance

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

On-Region Characteristics

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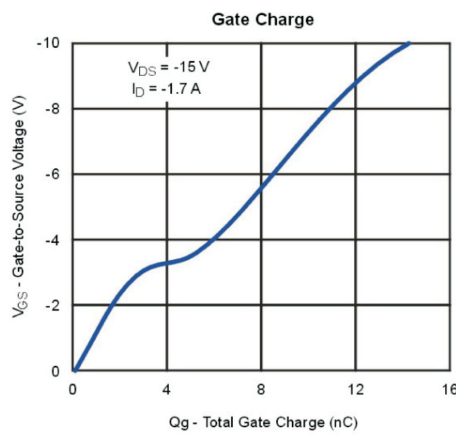
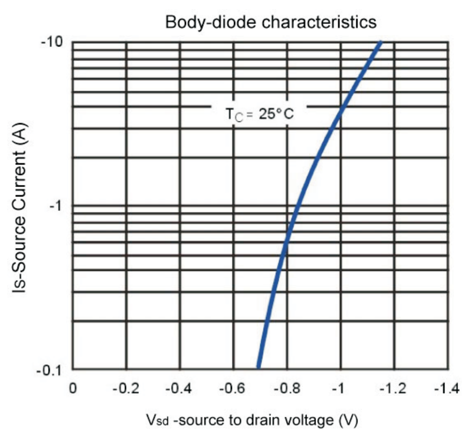
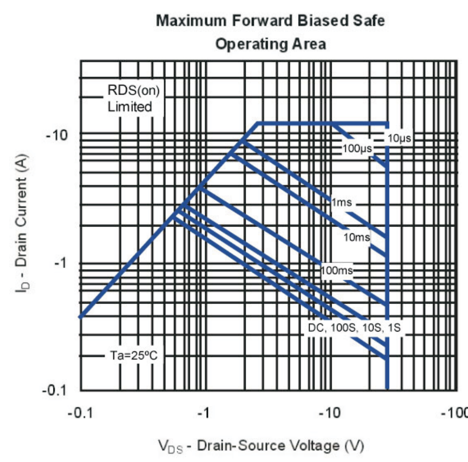
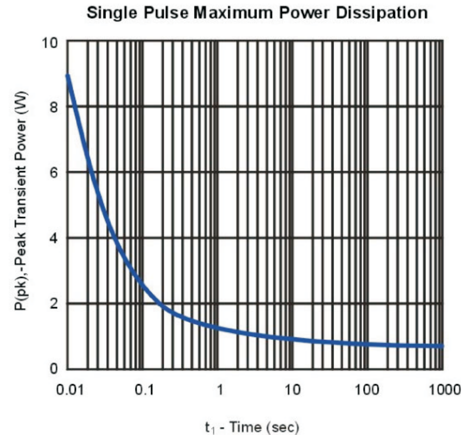
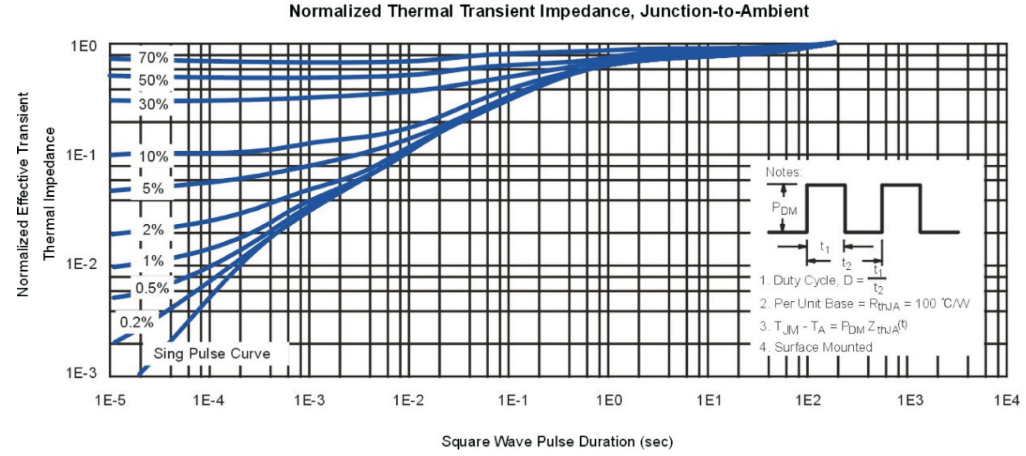
Rating and characteristic curves (FMS2303)











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Pinning information

Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source	D G S	Drain Gate Source

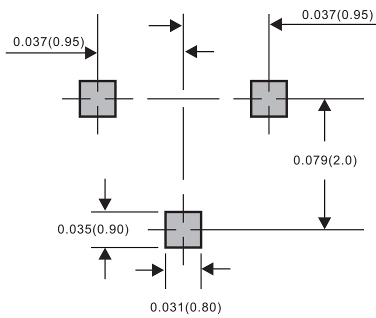
Marking

Type number	Marking code
FMS2303	WCG0A (Note 1)

Note: 1.
P/N :
"WCG" is FMS2303-H
"WC" shown on the 1st~2rd position on --- FMS2303
"G" shown on the 3th position on --- Green product-Halogen free
D/C :
0A is the sequence of "0-9" & "A~Z"
0~9 shown on the 4th position on ---2010~2019
A~Z shown on the5th position on ---1week~26week
A~Z shown on the 5th position on ---27week~52week

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)

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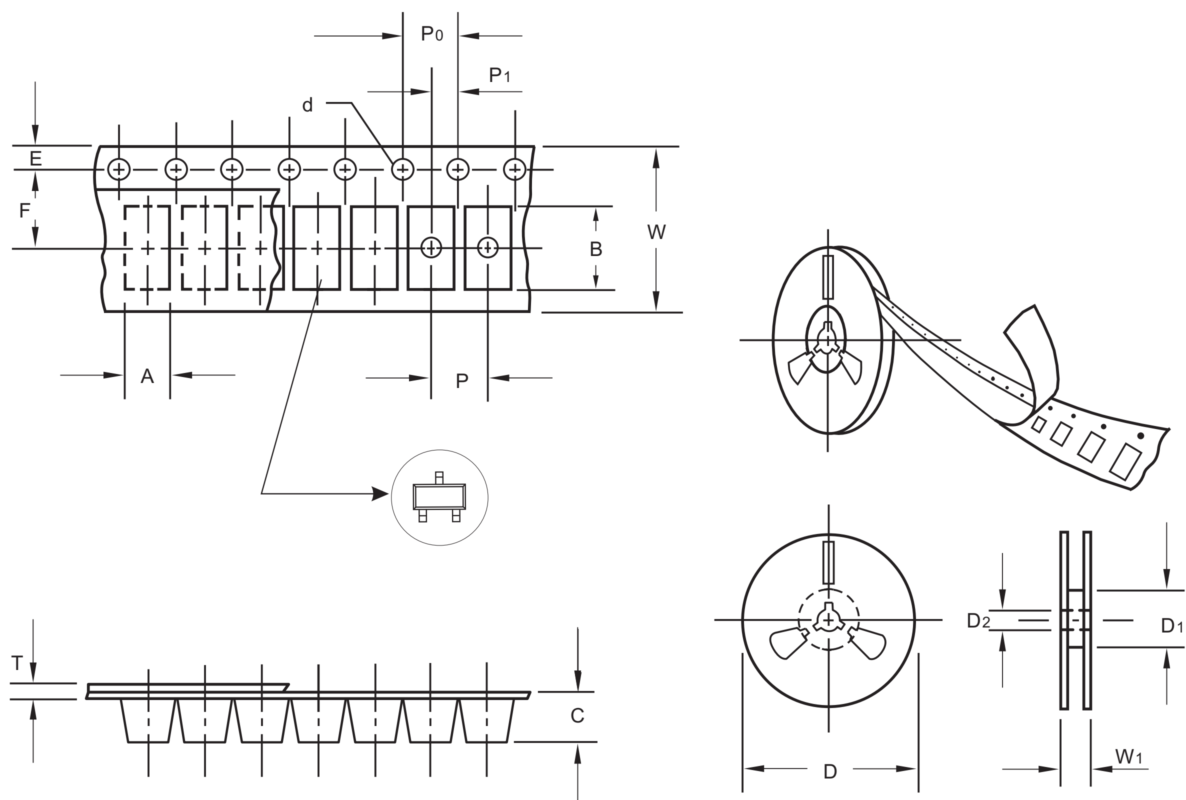
Packing information



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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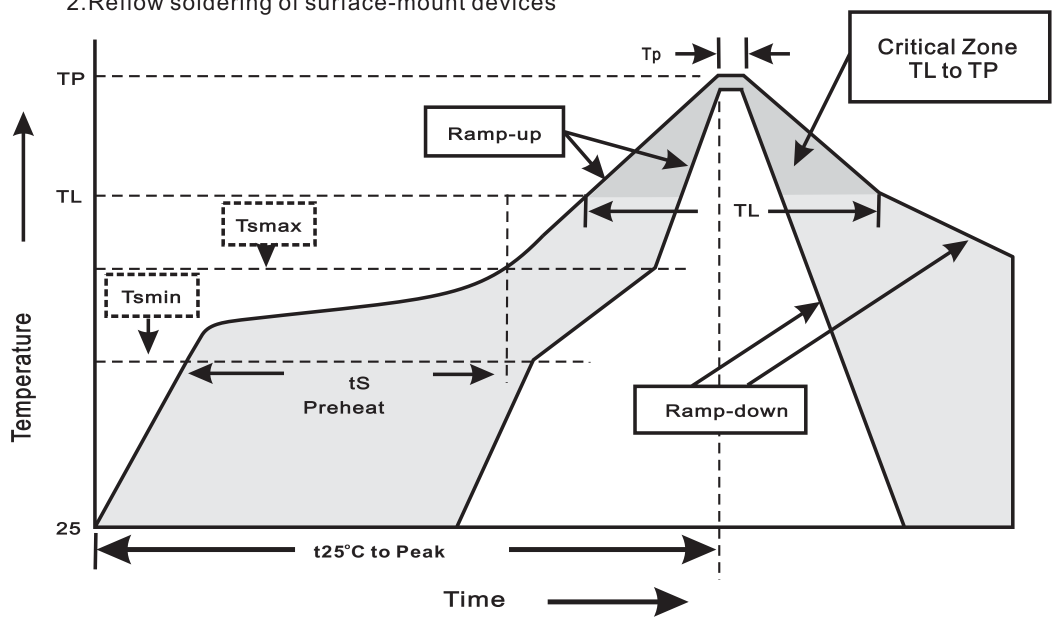
Reel packing

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

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