FMOS3443

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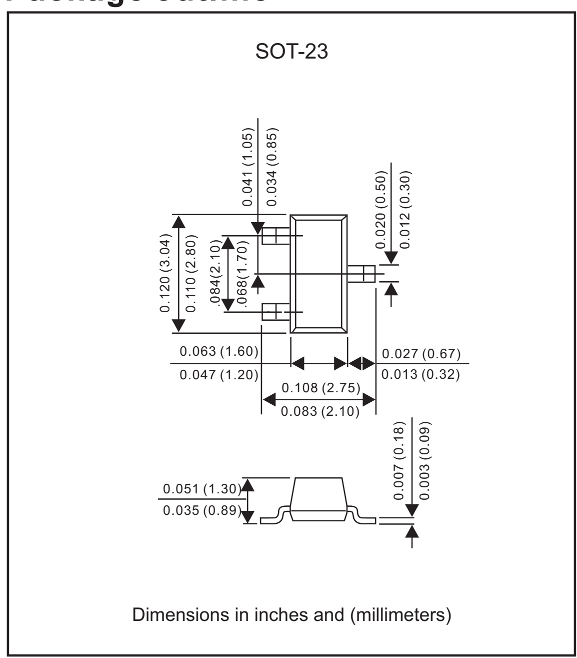
20V P-Channel Enhancement Mode MOSFET

Features

- $V_{DS(V)}$= -20V
- $R_{DS(ON)}$, V_{GS} @ -4.5V, I_D @ -4.7A 58mΩ Typ
- $R_{DS(ON)}$, V_{GS} @ -2.5V, I_D @ -1.0A 75mΩ Typ
- Surface mount package
- Simple drive requirement
- Small package outline
- Advanced trench process technology
- High density cell design for ultra low on-resistance
- we declare that the material of product compliance with RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex.FMOS3443-H

Package outline



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

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

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	-20	V
Continuous drain current	I_D	-4.7	A
Pulsed drain current ,Note 1	I_{DM}	-20	A
Gate-source voltage	V_{GS}	±12	V
Maximum power dissipation (T_A= 25°C) Maximum power dissipation (T_A= 75°C)	P_D	1.1 0.7	W
Junction-to-ambient thermal resistance (PCB mounted) ,Note 2)	$R_{\theta JA}$	110	°C/W
Operation junction temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Notes 1. Repetitive rating: pulse width limited by the maximum junction temperation
2. 1-in^2 2oz Cu PCB board
3. Guaranteed by design; not subject to production testing

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

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Static papameters						
Drain-source breakdown voltage	V_{GS} = 0V, I_D= -250μA	B_{VDSS}	-20			V
Zero gate voltage drain current	V_{DS} = -20V, V_{GS} = 0V	I_{DSS}			-1.0	μA
Gate body leakage	V_{DS}=0V V_{GS}= ±12V	I_{GSS}			±100	nA
Gate threshold voltage	V_{DS} =V_{GS} ,I_D= -250μA	$V_{GS(th)}$	-0.6	-0.85	-1.4	V
Drain-source on-resistance	V_{GS}= -4.5V, I_D= -4.7A V_{GS}= -2.7V, I_D= -3.8A V_{GS}= -2.5V, I_D= -1.0A	$R_{DS(ON)}$		58 63 75	70 90 110	mΩ
Forward transconductance	V_{DS} =-10V, I_D = -4.7A	g_{fs}		8		S
Dynamic characteristics 3)						
Total gate charge	V_{DS} = -10V, V_{GS} = -4.5V, I_D=-4.7A	Q_g		24	36	nC
Gate-source charge		Q_{gs}		18		
Gate-drain charge		Q_{gd}		2.7		
Turn-on delay time	V_{DD} = -10V, R_D = 10Ω I_D = -1A, V_{GS} = -4.5V R_G = 6Ω	$t_{d(on)}$		22	35	ns
Turn-on rise time		t_r		35	55	
Turn-off delay time		$t_{d(off)}$		45	70	
Turn-off fall time		t_f		25	40	
Source-drain diode						
Maximum body-diode continuous current		I_S			-1.7	A
Diode forward on-voltage	I_S = -1.7A, V_{GS} = 0V	V_{SD}			-1.2	V

Note : Pulse test: pulse width ≦300μs, duty cycle≦2%

http://www.formosams.com/
TEL:886-2-22696661
FAX:886-2-22696141

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Rating and characteristic curves (FMOS3443)

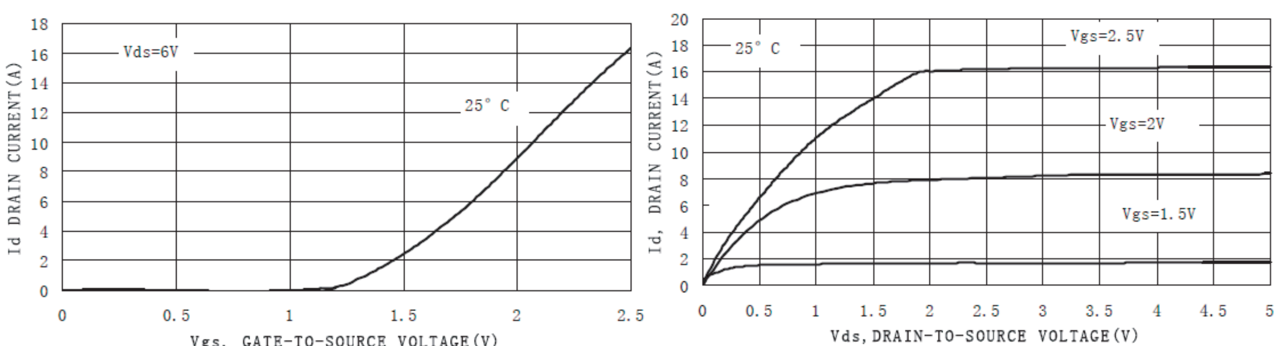

Figure 1. Transfer Characteristics

Figure 2. On–Region Characteristics

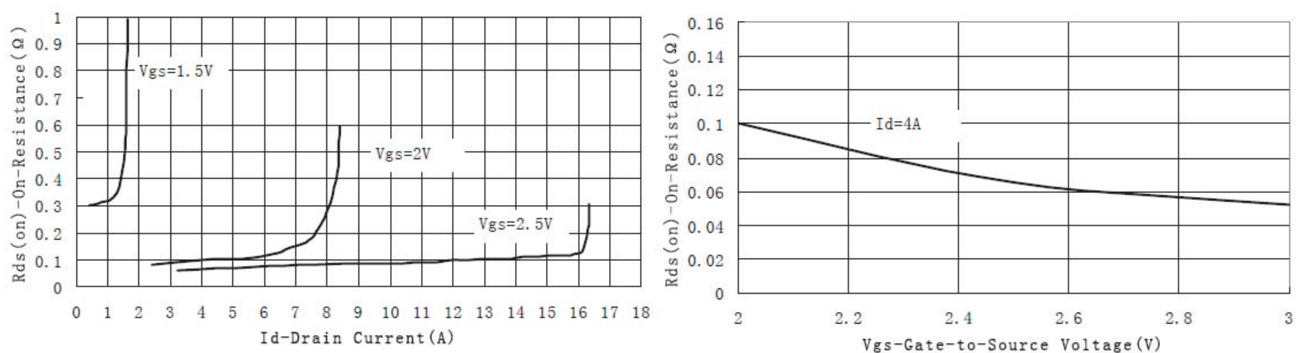

Figure 3. On–Resistance versus Drain Current

Figure 4. On-Resistance vs. Gate-to-Source Voltage

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Pinning information

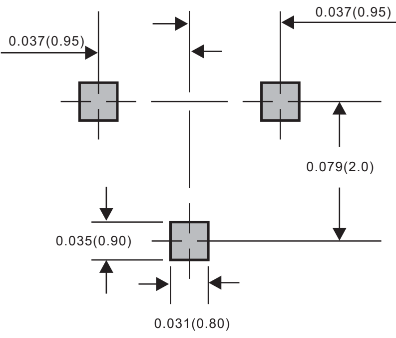
Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source	D G S	Drain Gate Source

Marking

Type number	Marking code
FMOS3443	P34

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)

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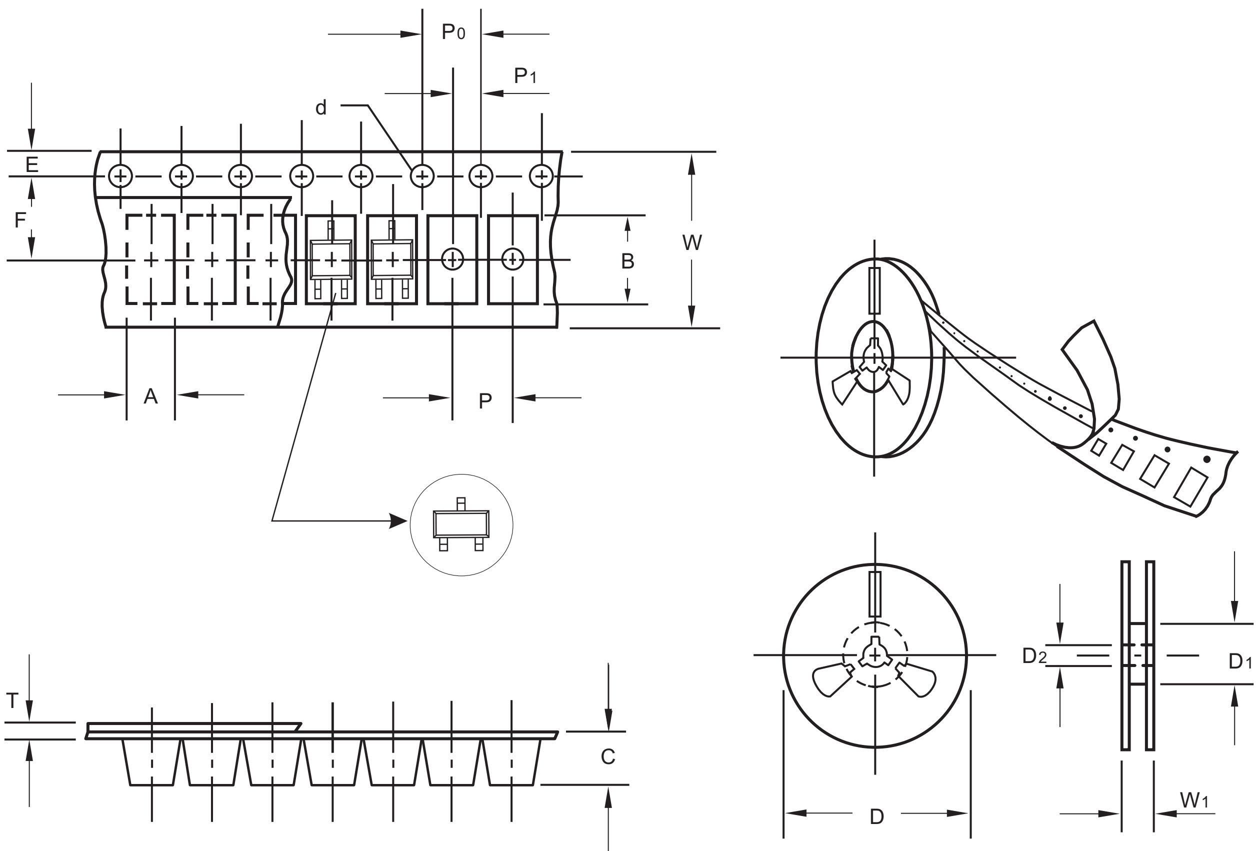
Packing information



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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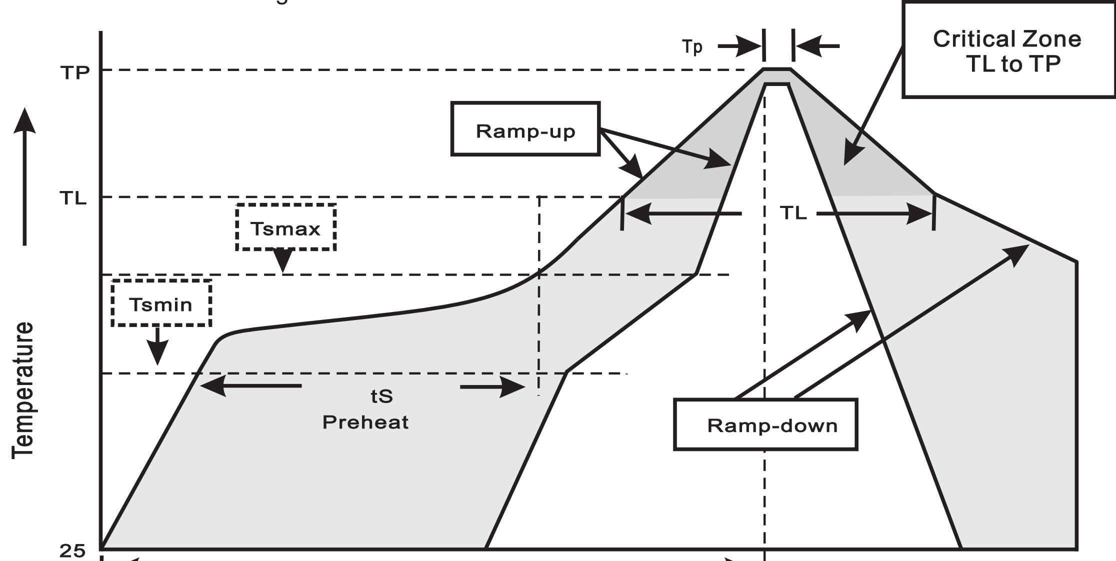
Reel packing

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"	3,000	4.0	30,000	183*123*183	178	382*257*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