FMBSS84-H

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FMBSS84-H

-230mA -50V P-Channel Enhancement Mode MOSFET

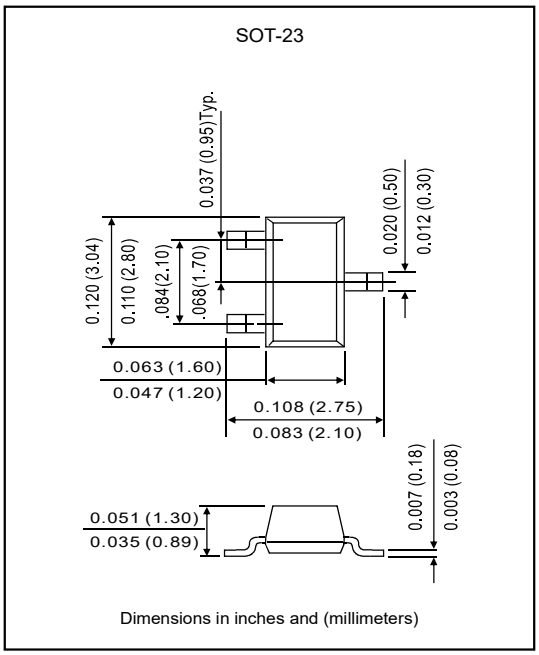
Features

- Low thermal resistance and low gate charge.
- Fast switching speed.
- Advanced trench cell design.
- Lead-free parts meet RoHS requirements.

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.

Package outline



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

Parameter	Symbol	Ratings	Unit
Drain-source voltage	$-V_{DS}$	50	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	$-I_D$	230	mA
Pulsed drain current (Note1)	$-I_{DM}$	1.2	A
Power dissipation (Note2) (T_A=25ºC)	P_D	0.3	W
Thermal resistance, junction to ambient (Note2)	$R_{\theta JA}$	417	ºC/W
Operation junction temperature	T_J	+150	ºC
Storage temperature range	T_{STG}	-55 to +150	ºC

Note: 1.Pulse width ≤ 2%, limited by T_{J_Max}.
2.Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

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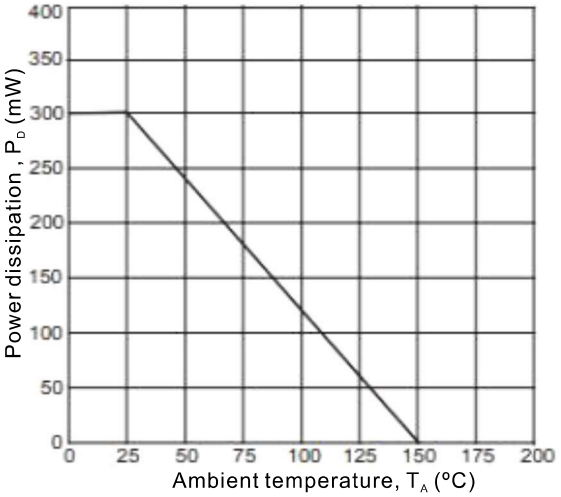
Electrical characteristics (At T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-BV_{DSS}$	$-I_D$=250μA, V_{GS}=0V	50			V
Drain-source leakage current	$-I_{DSS}$	$-V_{DS}$=50V, V_{GS}=0V			1	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±95	nA
On characteristics						
Gate threshold voltage	$-V_{GS(th)}$	V_{GS}=V_{DS}, $-I_D$=250μA	0.9	1.3	2	V
Static drain-source on-resistance	$R_{DS(ON)}$	$-V_{GS}$=10V, $-I_D$=0.1A		1.6	2.5	Ω
		$-V_{GS}$=5V, $-I_D$=0.1A		1.8	3	
Forward transconductance	g_{FS}	$-V_{DS}$=25V, $-I_D$=0.1A		0.05		S
Dynamic parameters						
Input capacitance	C_{iss}	V_{GS}=0V, $-V_{DS}$=25V, f=1.0MHz		24.6		pF
Out capacitance	C_{oss}			4.7		
Reverse transfer capacitance	C_{rss}			2.8		
Switching parameters						
Total gate charge	Q_g	$-V_{GS}$=10V, $-V_{DS}$=10V, $-I_D$=0.1A		0.59		nC
		$-V_{GS}$=4.5V, $-V_{DS}$=10V, $-I_D$=0.1A		0.28		
Gate to source charge	Q_{gs}	$-V_{DS}$=10V, $-I_D$=0.1A		0.09		
Gate to drain charge	Q_{gd}			0.08		
Turn-on delay time	$t_{d(on)}$	$-V_{DS}$=30V, $-V_{GS}$=10V, R_g=50Ω, $-I_D$=0.27A		10		ns
Turn-off delay time	$t_{d(off)}$			18		ns

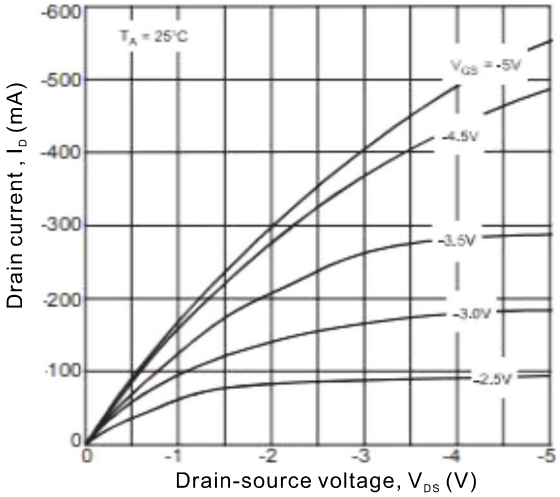
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Rating and characteristic curves

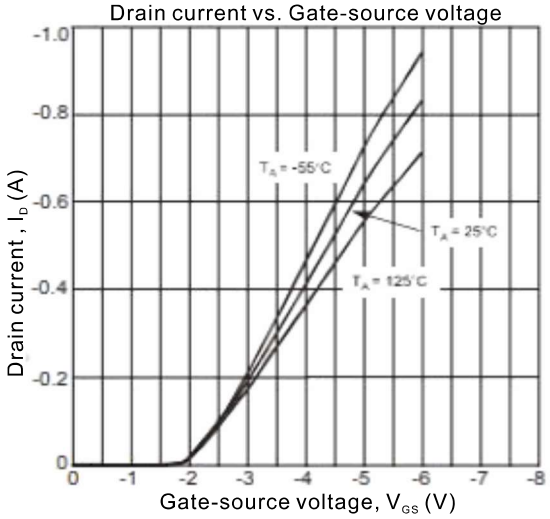
Maximum power dissipation vs. Ambient temperature

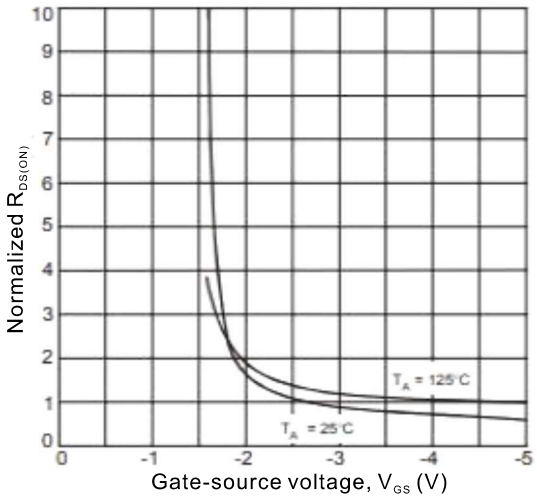


Drain current vs. Drain-source voltage

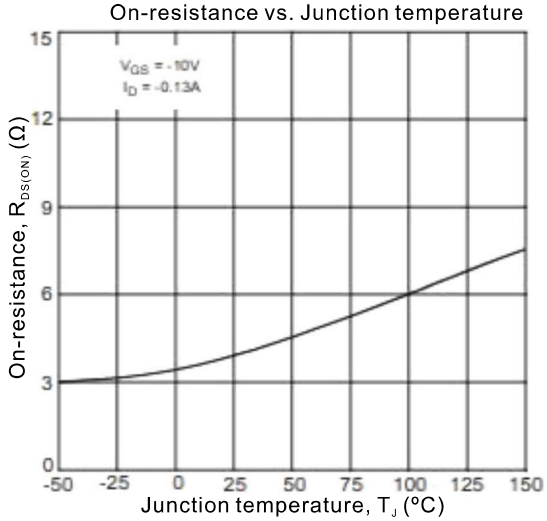


Drain current vs. Gate-source voltage

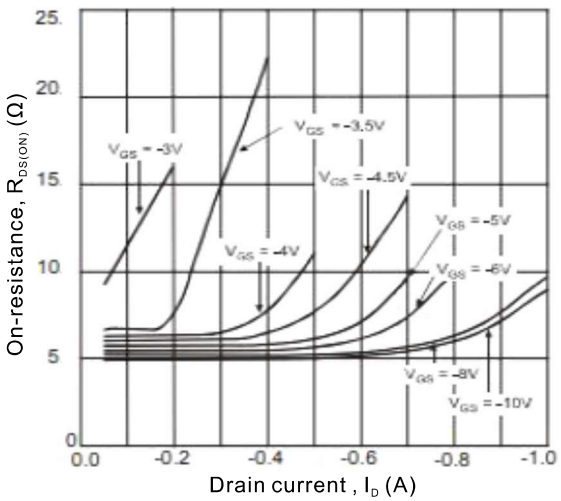




On-resistance vs. Junction temperature



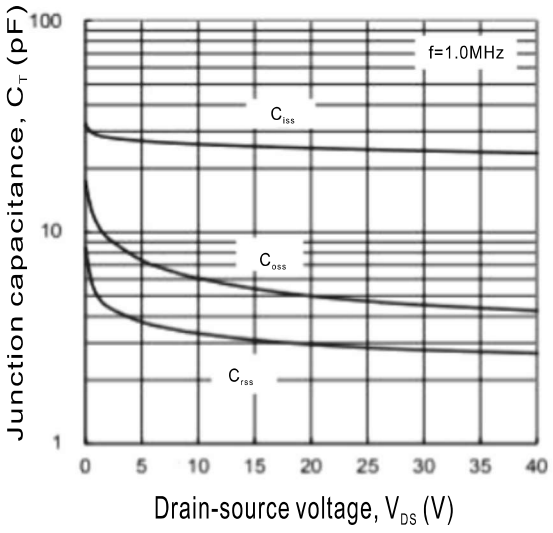
On-resistance vs. Drain current



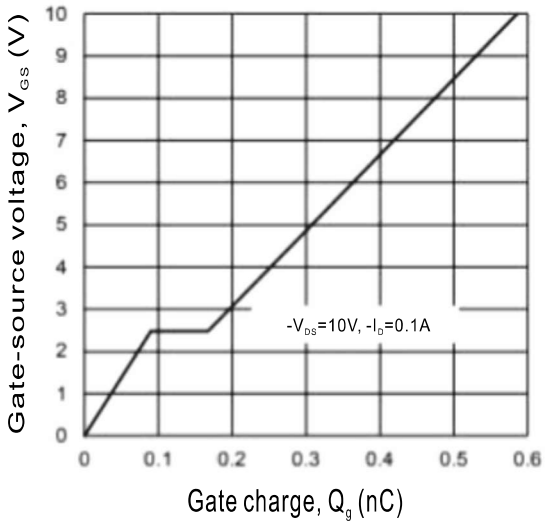
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Rating and characteristic curves

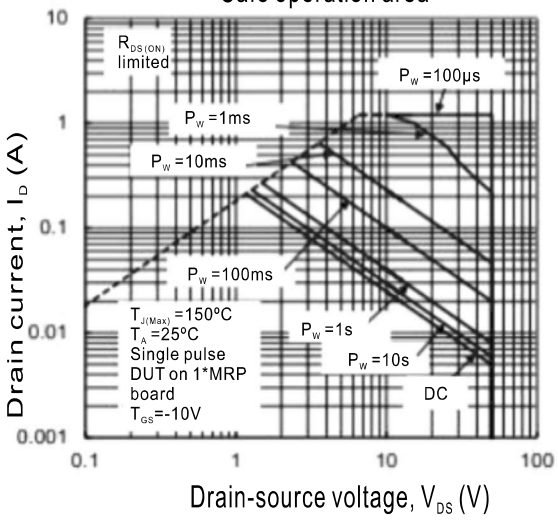
Typical junction capacitance



Gate charge

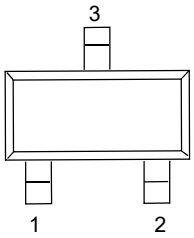
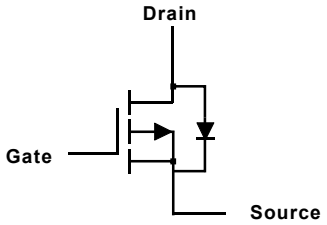


Safe operation area



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Pinning information

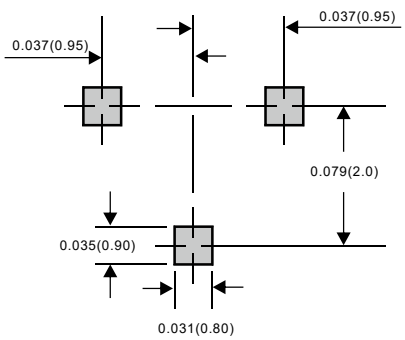
Pin	Simplified outline	Symbol
Pin 1 Gate Pin 2 Source Pin 3 Drain		

Marking

Type number	Marking code
FMBSS84-H	B84

Suggested solder pad layout

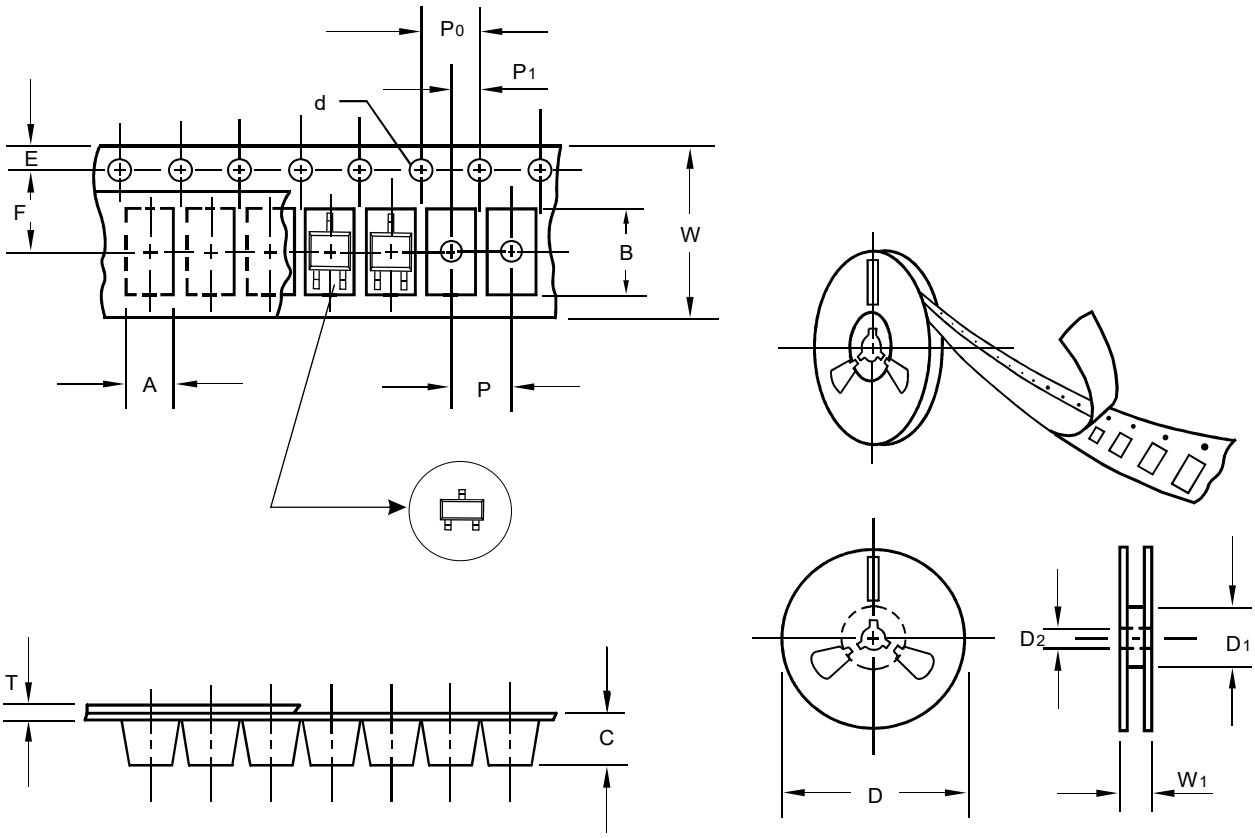
SOT-23



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	53.40
Feed hole diameter	D_2	1.0	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	12.3

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

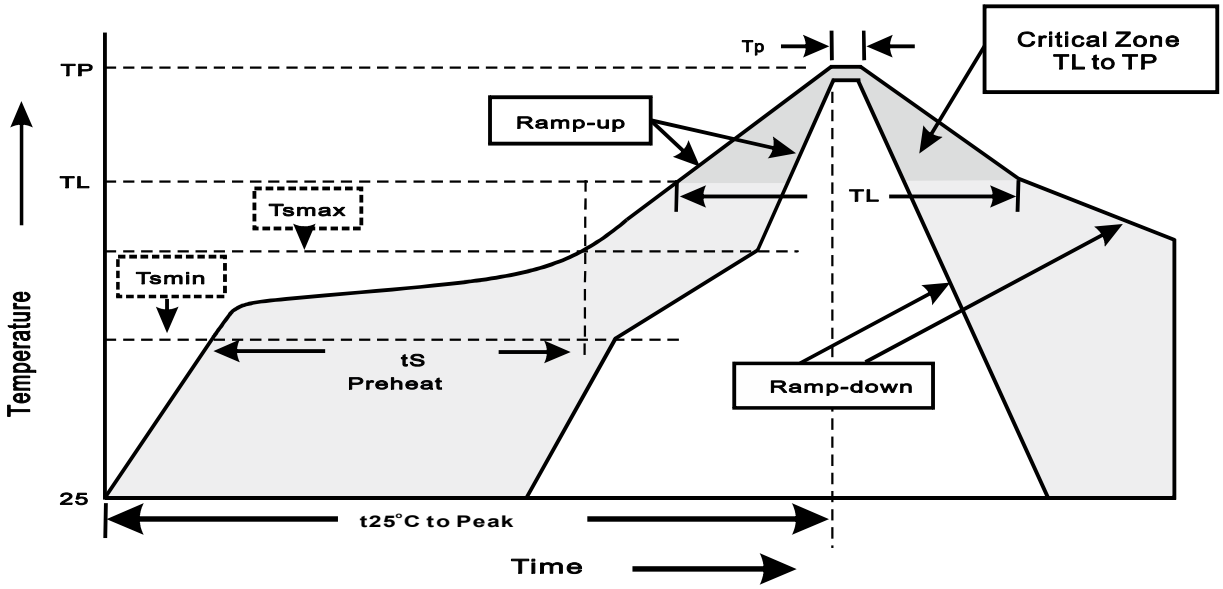
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Reel packing

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)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

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