

FMOSBSS84KW

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FMOSBSS84KW

**-0.13A -50V P-Channel Enhancement
Mode MOSFET ESD Protection**

Features

- Energy efficient.
- Low threshold voltage.
- High-speed switching.
- Miniature surface mount package saves board space.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" for Halogen-free part, ex. FMOSBSS84KW-H.

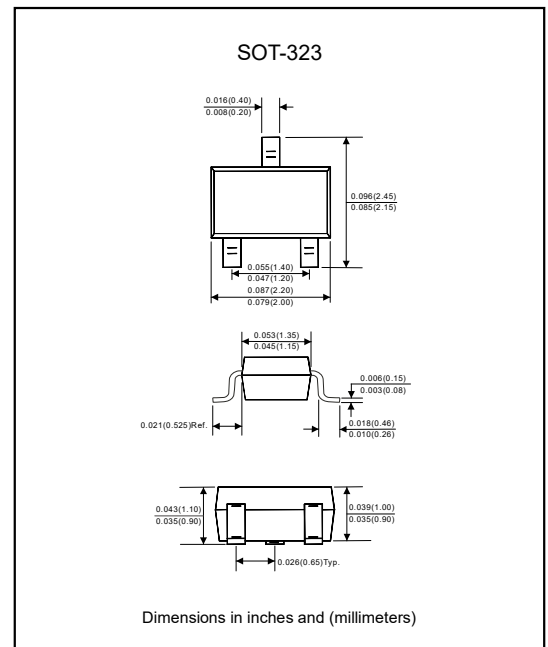
Applications

- DC-DC converters, load switching,
- Power management in portable and battery-powered products.
- Computers, printers, cellular and cordless telephones.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-323.
- 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	0.13	A
Drain current pulse (Note1) (t _p ≤10μs)	-I _{DM}	0.52	A
Power dissipation	P _D	225	mW
Thermal resistance junction to ambient (Note2)	R _{θJA}	556	°C/W
Operating Junction temperature	T _J	+150	°C
Storage temperature range	T _{STG}	-55 to +150	°C
Lead temperature for soldering purposes, for 5 seconds	T _L	260	°C

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Electrical characteristics (At $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-BV_{\text{DSS}}$	$-I_{\text{D}}=250\mu\text{A}$, $V_{\text{GS}}=0\text{V}$	50			V
Drain-source leakage current	$-I_{\text{DSS}}$	$-V_{\text{DS}}=25\text{V}$, $V_{\text{GS}}=0\text{V}$			0.1	μA
		$-V_{\text{DS}}=50\text{V}$, $V_{\text{GS}}=0\text{V}$			15	
Gate-source leakage current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}$, $V_{\text{GS}}=0\text{V}$			± 10	μA
On characteristics						
Gate threshold voltage (Note3)	$-V_{\text{GS(th)}}$	$V_{\text{DS}}=V_{\text{GS}}$, $-I_{\text{D}}=250\mu\text{A}$	0.9		2	V
Static drain-source on-resistance (Note3)	$R_{\text{DS(ON)}}$	$-V_{\text{GS}}=5\text{V}$, $-I_{\text{D}}=0.1\text{A}$			10	Ω
		$-V_{\text{GS}}=10\text{V}$, $-I_{\text{D}}=0.1\text{A}$			8	
Forward transconductance (Note1)	g_{FS}	$-V_{\text{DS}}=25\text{V}$, $-I_{\text{D}}=100\text{mA}$	50			ms
Dynamic parameters (Note4)						
Input capacitance	C_{iss}	$V_{\text{GS}}=0\text{V}$, $-V_{\text{DS}}=5\text{V}$, $f=1.0\text{MHz}$		30		pF
Out capacitance	C_{oss}			10		
Reverse transfer capacitance	C_{rss}			5		
Switching parameters (Note4)						
Turn-on delay time	$t_{\text{d(on)}}$	$-V_{\text{DD}}=15\text{V}$, $R_{\text{L}}=50\Omega$, $-I_{\text{D}}=2.5\text{A}$		2.5		nS
Rise time	t_{r}			1		
Turn-off delay time	$t_{\text{d(off)}}$			16		
Fall time	t_{f}			8		
Source-drain diode ratings and characteristics						
Diode continuous current	$-I_{\text{S}}$				0.13	A
Maximum pulsed drain-source diode forward current	$-I_{\text{SM}}$				0.52	A
Drain-source diode forward voltage (Note3)	$-V_{\text{SD}}$	$-I_{\text{S}}=0.13\text{A}$, $V_{\text{GS}}=0\text{V}$			2.2	V

Note : 1. Repetitive rating: pulse width limited by junction temperature.

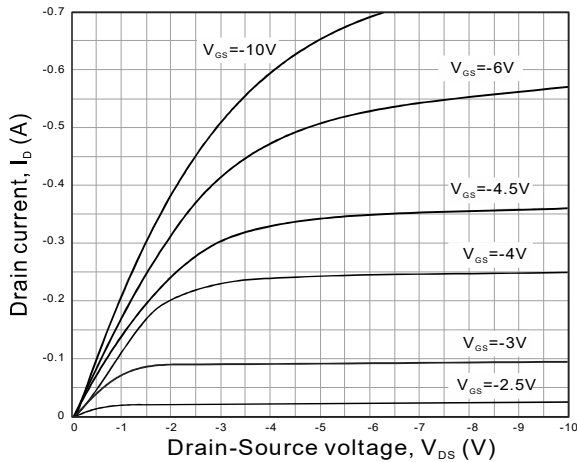
2. Surface mounted on FR4 board, $t_{\text{S}} \leq 10\text{s}$.3. Pulse test: pulse widths $\leq 300\mu\text{s}$, duty cycles $\leq 2\%$.

4. Guaranteed by design, not subject to producing.

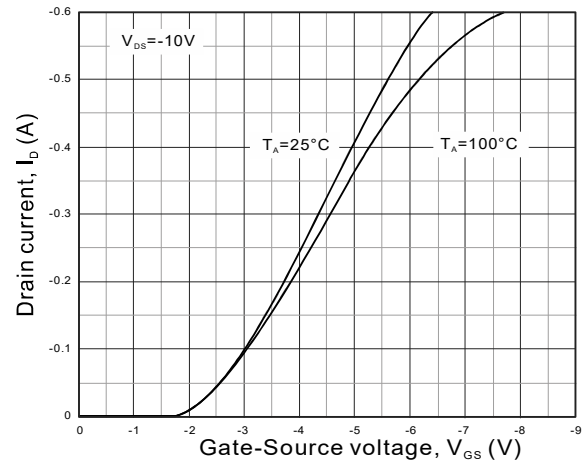
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Rating and characteristic curves

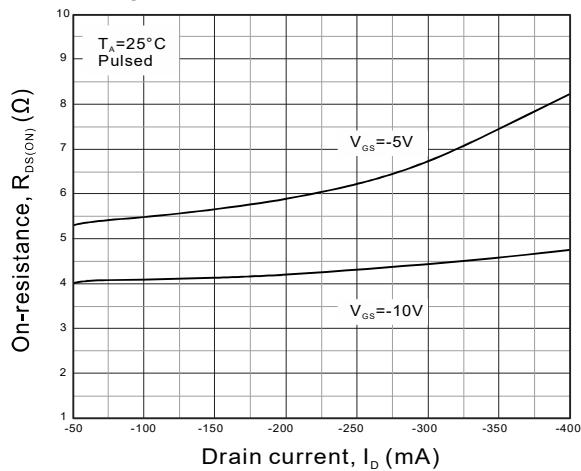
Output characteristics



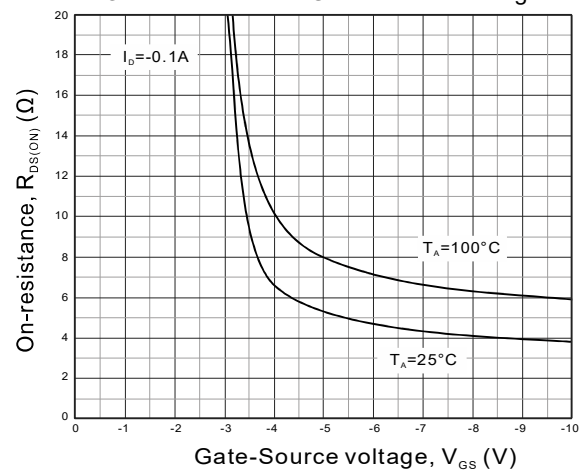
Transfer characteristics



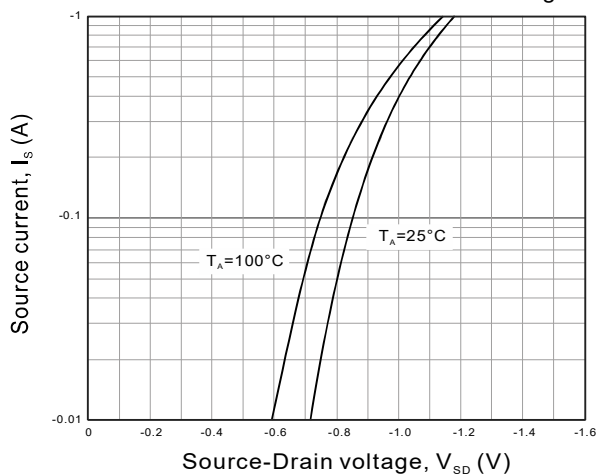
On-resistance vs. Drain current



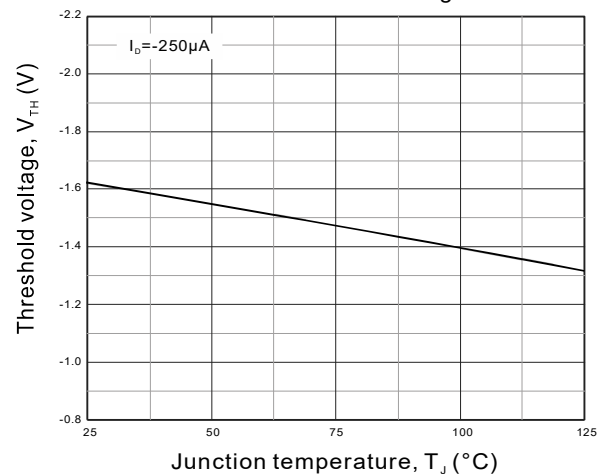
On-resistance vs. Gate-Source voltage



Source current vs. Source-Drain voltage

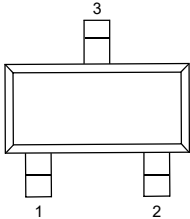
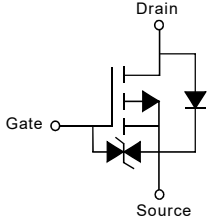


Threshold voltage



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Pinning information

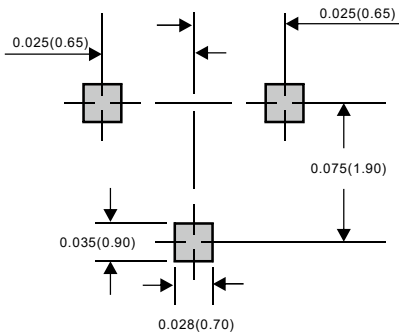
Pin	Simplified outline	Symbol
Pin 1 Gate Pin 2 Source Pin 3 Drain		

Marking

Type number	Marking code
FMOSBSS84KW	84K

Suggested solder pad layout

SOT-323



Dimensions in inches and (millimeters)

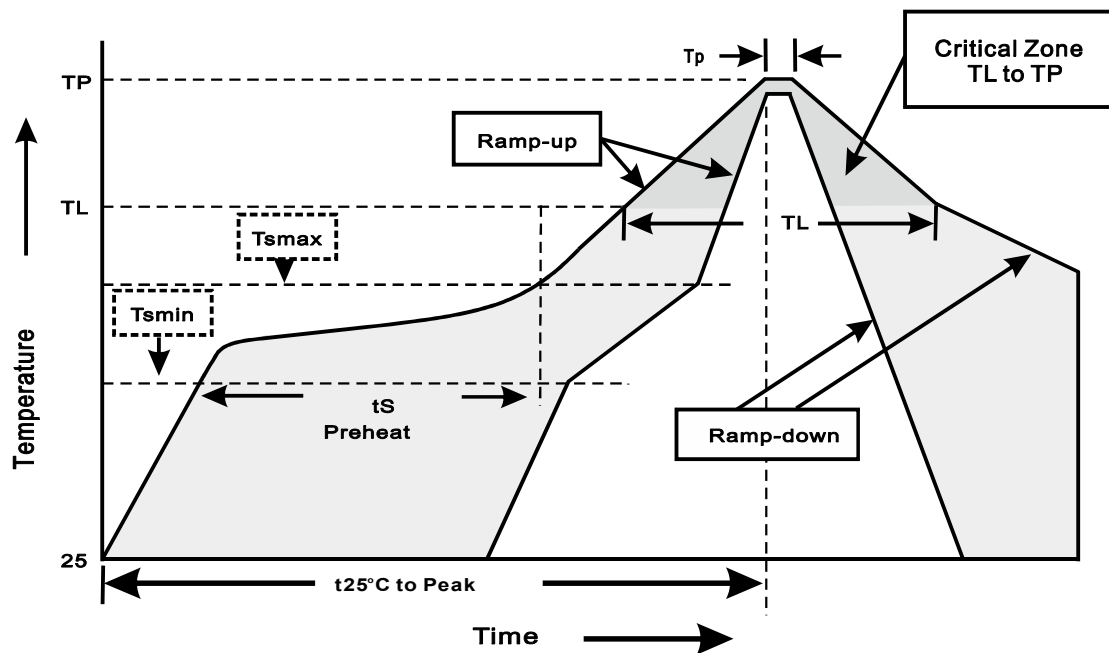
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Reel packing

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-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*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)	$<3^{\circ}\text{C/sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C/sec}$
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	$<6^{\circ}\text{C/sec}$
Time 25°C to Peak Temperature	$<6\text{ minutes}$