

FMOSKBSS127Z**List**

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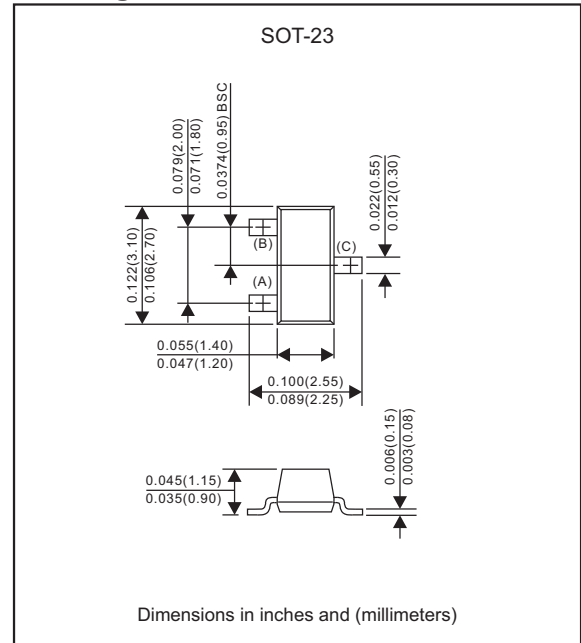
FMOSKBSS127Z

**600V, 21mA Enhancement
N-Channel MOSFET****Features**

- $R_{DS(ON)} \leq 600\Omega$ @ $V_{GS}=4.5V$, $I_D=16mA$.
- $R_{DS(ON)} \leq 500\Omega$ @ $V_{GS}=10V$, $I_D=16mA$.
- Ultra low gate charge (Typical 140nC).
- Ultra high switching speed.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.FMOSKBSS127Z-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 $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	600	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain Current	I_D	21	mA
Drain current pulse (Note 1)	I_{DM}	90	mA
Peak diode recovery dv/dt	dv/dt	6	KV/ μs
Power dissipation	P_D	0.3	W
Operating Junction temperature range	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$
Thermal resistance junction to ambient	$R_{\theta JA}$	325	$^\circ\text{C/W}$

Note :

- Absolute maximum ratings are those values beyond which the device could be permanently damaged.
- Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	600			V
Drain-source leakage current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$			100	nA
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 20V$			± 10	μA
On characteristics						
Gate threshold voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=8\mu A$	1.4		2.6	V
Static drain-source on-resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=16mA$		350	600	m Ω
		$V_{GS}=10V, I_D=16mA$		300	500	m Ω
Dynamic parameters						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$		7		μF
Out capacitance	C_{oss}			6.2		
Reverse transfer capacitance	C_{rss}			2.5		
Switching parameters						
Turn-on delay time	$t_{D(ON)}$	$V_{DS}=300V, V_{GS}=10V, R_G=6\Omega, I_D=20mA$		9		ns
Rise time	t_R			45		
Turn-off delay time	$t_{D(OFF)}$			10		
Fall time	t_F			180		
Total gate charge	Q_g	$V_{DS}=480V, I_D=20mA, V_{GS}=10V$		7		nC
Gate-source charge	Q_{gs}			18		
Gate-drain charge	Q_{gd}			0.5		
Drain-source diode characteristics and maximum ratings						
Drain-source diode forward voltage	V_{SD}	$V_{GS}=0V, I_F=16mA$			1.2	V
Maximum body-diode continuous current	I_S	$V_{GS}=V_{DS}=0V, T_A=25^{\circ}C$			16	mA
Maximum body-diode continuous current	I_{SM}				90	
Body diode reverse recovery time	t_{rr}	$V_R=300V, I_F=16mA, dI_F/dt=100A/\mu s$		150		ns
Body diode reverse recovery charge	Q_{rr}			240		μC

Rating and characteristic curves (FMOSKBSS127Z)

Fig.1 Drain Current vs. Drain-Source Voltage

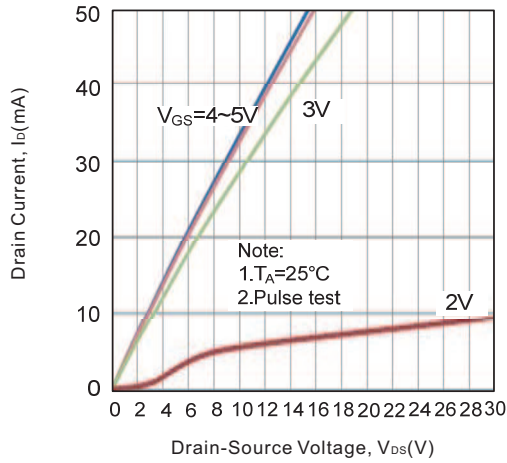


Fig.2 Drain-Source On-Resistance vs. Gate-Source Voltage

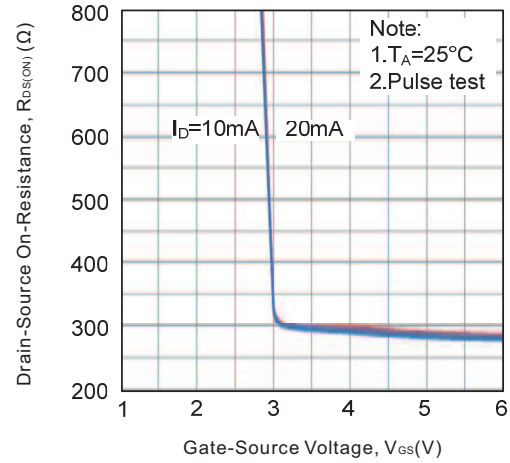


Fig.3 Gate Charge Characteristics

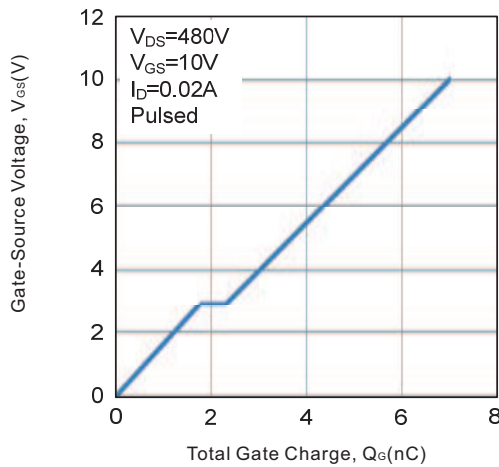


Fig.4 Capacitance Characteristics

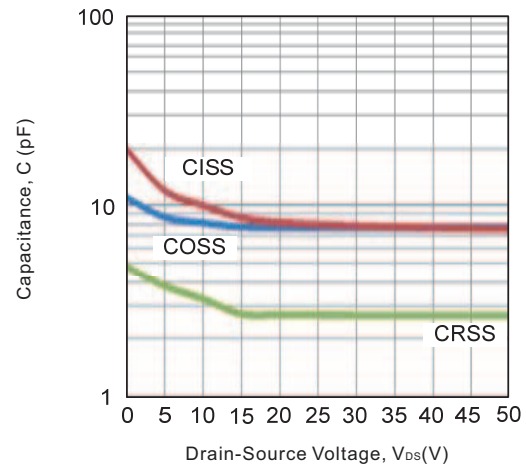


Fig.5 Drain-Source On-Resistance vs. Junction Temperature

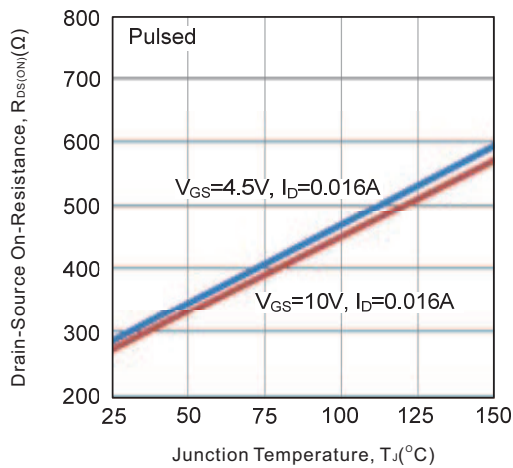
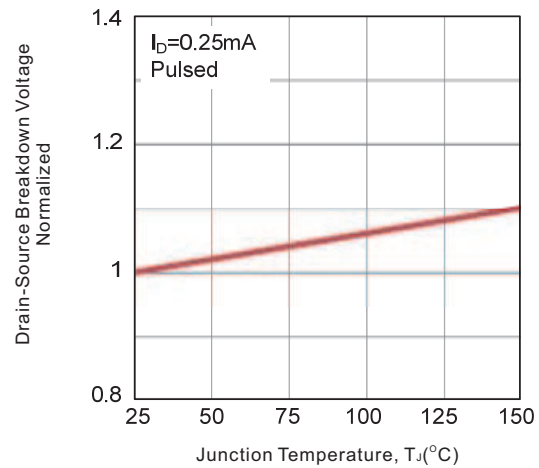


Fig.6 Breakdown Voltage vs. Junction Temperature



Rating and characteristic curves (FMOSKBSS127Z)

Fig.7 Gate Threshold Voltage vs. Junction Temperature

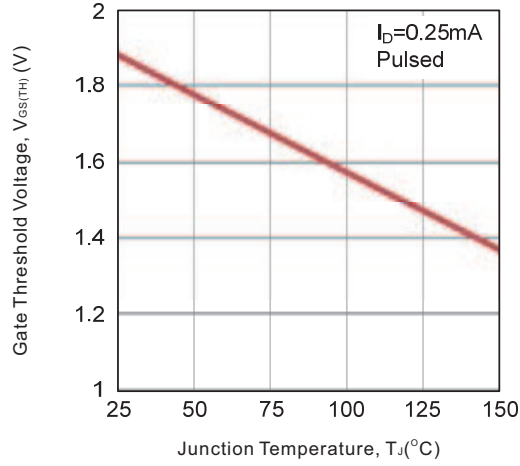


Fig.8 Source Current vs. Source-Drain Voltage

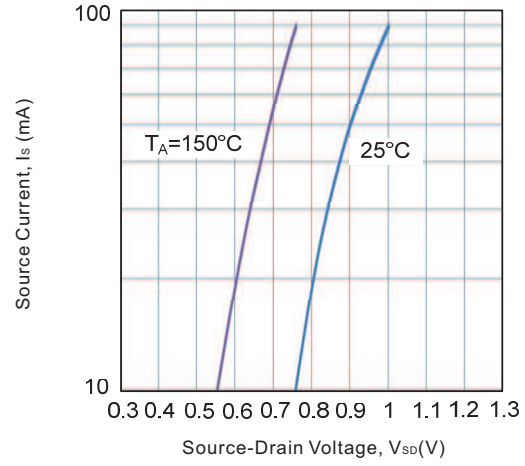


Fig.9 Drain Current vs. Gate-Source Voltage

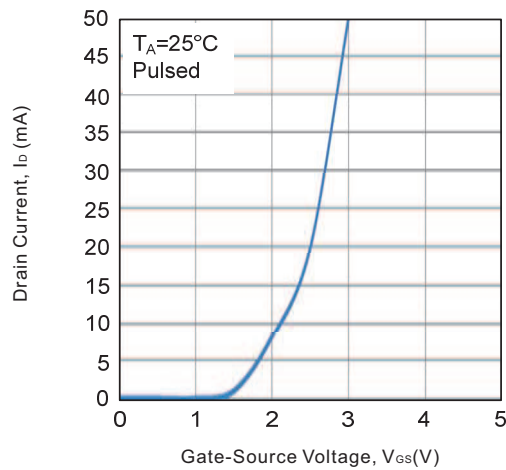


Fig.10 Drain-Source On-Resistance vs. Drain Current

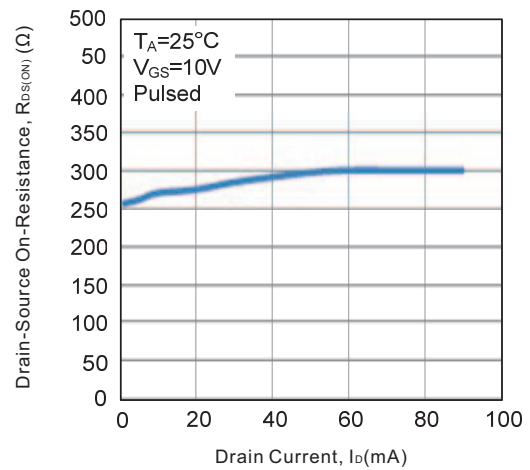
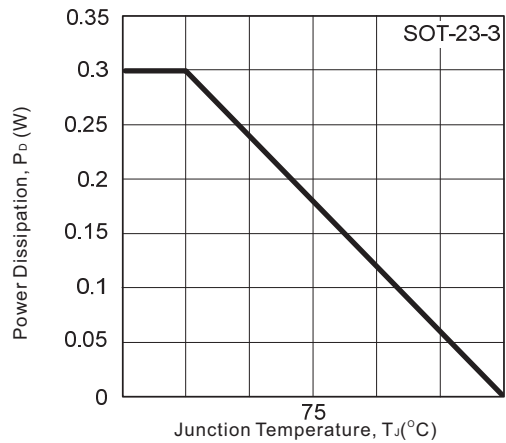
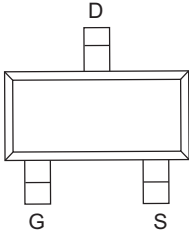
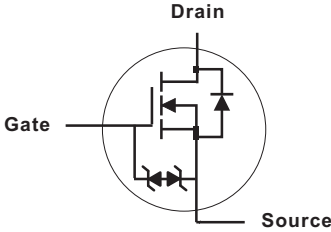


Fig.11 Power Dissipation vs. Junction Temperature



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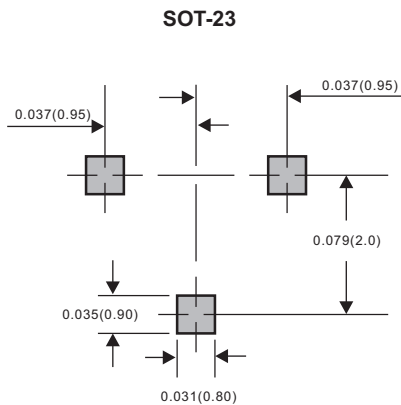
Pinning information

Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

Type number	Marking code
FMOSKBSS127Z	127ZG

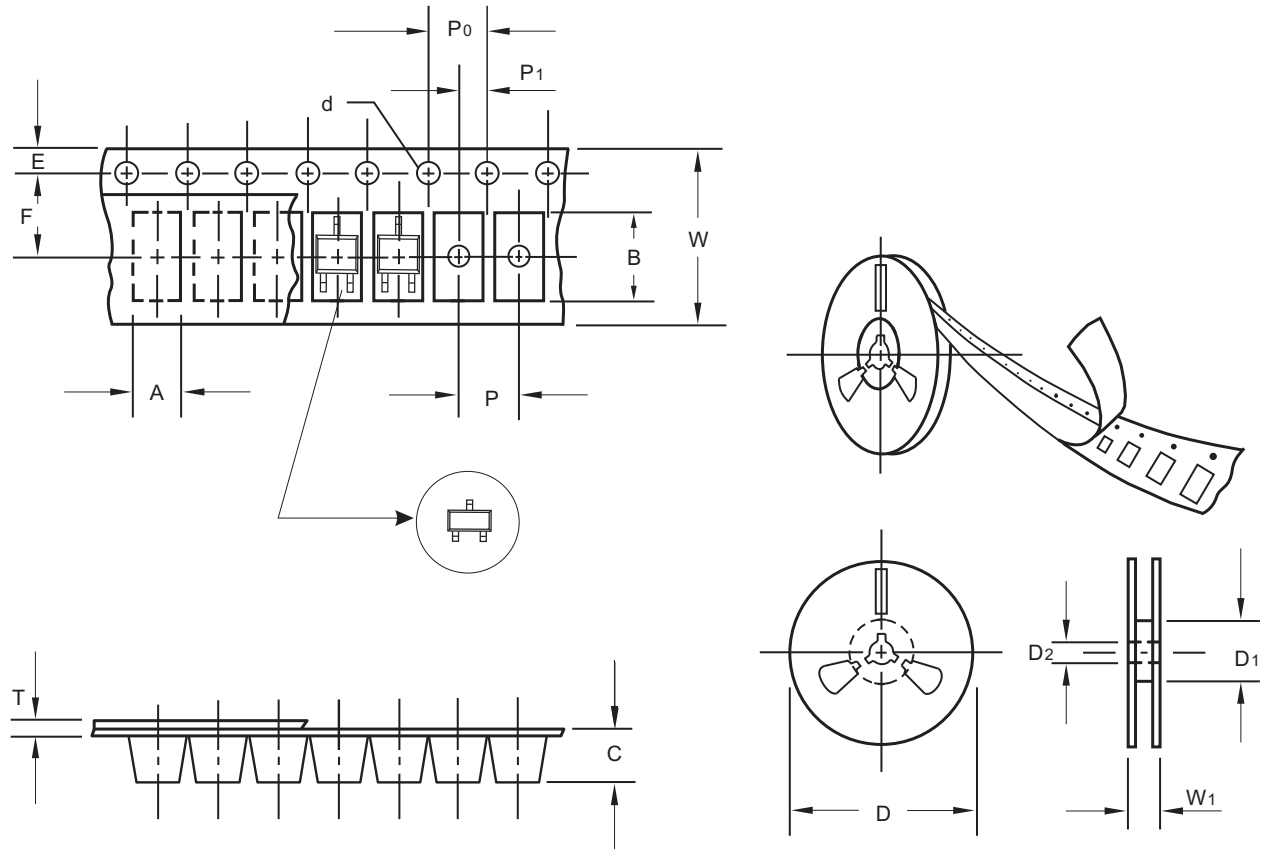
Suggested solder pad layout



Dimensions in inches and (millimeters)

FMOSKBSS127Z

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	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

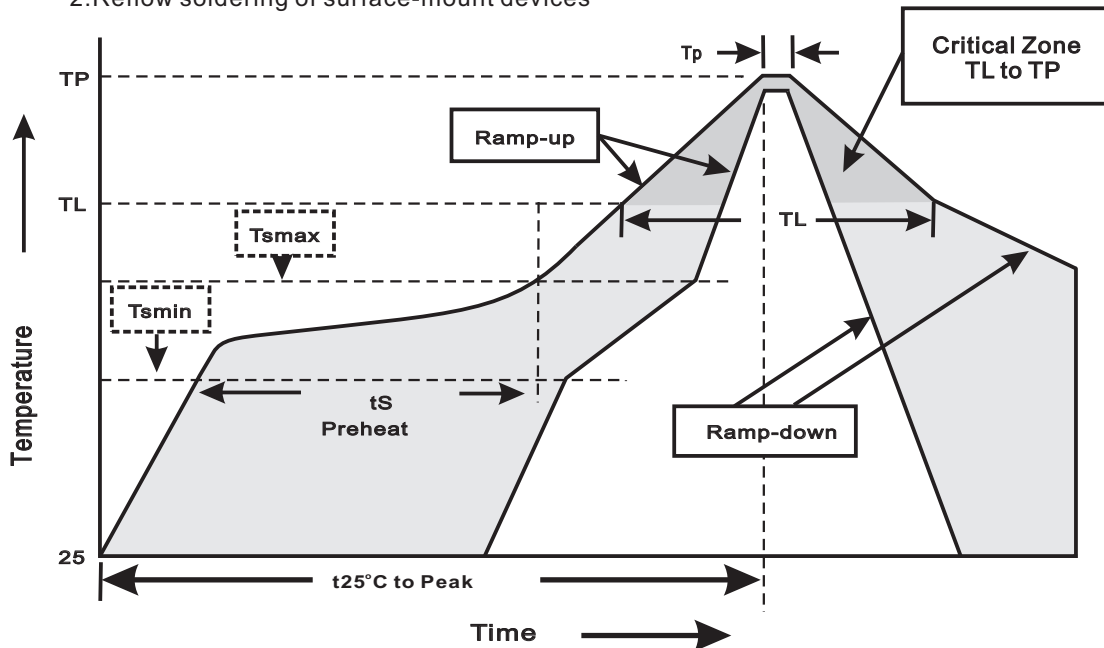
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Reel packing

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(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°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