N-Channel Enhancement MOSFET

BSS127

Features

- Low input capacitance
- High V_{DSS} rating for power application
- Low input / output leakage

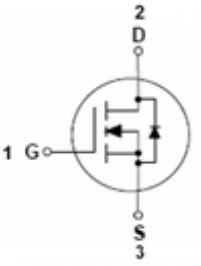
HF

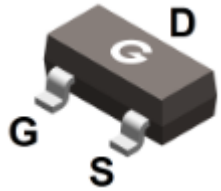
Typical Applications

- Motor control
- DC-DC converters
- Power management functions

Mechanical Data

- Case: SOT-23
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matted-Tin plated; Solderable Per MIL-STD-202, Method 208





SOT-23

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BSS127	SOT-23	3000 pcs / Tape & Reel	K29

Maximum Ratings (@ T_A = 25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	600	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current *1 (V_{GS} = 10V, T_A = 25°C)	I_D	50	mA
Continuous Drain Current *1 (V_{GS} = 10V, T_A = 70°C)	I_D	40	mA
Continuous Drain Current *2 (V_{GS} = 10V, T_A = 25°C)	I_D	70	mA
Continuous Drain Current *2 (V_{GS} = 10V, T_A = 70°C)	I_D	55	mA
Continuous Drain Current *1 (V_{GS} = 5V, T_A = 25°C)	I_D	45	mA
Continuous Drain Current *1 (V_{GS} = 5V, T_A = 70°C)	I_D	35	mA
Continuous Drain Current *2 (V_{GS} = 5V, T_A = 25°C)	I_D	65	mA
Continuous Drain Current *2 (V_{GS} = 5V, T_A = 70°C)	I_D	50	mA
Pulsed Drain Current *3 (T_{SP} = 25°C)	I_{DM}	0.16	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation *1	P_D	0.61	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	204	°C/W
Power Dissipation *2	P_D	1.25	W
Thermal Resistance Junction-to-Air *2	$R_{\theta JA}$	100	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics *4						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	600	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 600V, V_{GS} = 0V	-	-	0.1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
On Characteristics *4						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS} = 10V, I_D = 16mA	-	25	160	Ω
		V_{GS} = 5V, I_D = 16mA	-	30	190	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	-	4	V
Dynamic Characteristics *5						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 25V f = 1.0MHz	-	40	-	pF
C_{OSS}	Output Capacitance		-	15	-	
C_{RSS}	Reverse Transfer Capacitance		-	2	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 100V V_{GS} = 10V R_G = 25Ω I_D = 0.2A	-	30	-	ns
t_r	Turn-on Rise Time		-	10	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	53	-	
t_f	Turn-Off Fall Time		-	18	-	
Q_G	Total Gate-Charge	V_{DD} = 480V I_D = 0.2A V_{GS} = 10V	-	10	-	nC
Q_{GS}	Gate to Source Charge		-	1.5	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	6	-	
Source-Drain Diode Characteristics *4						
V_{SD}	Diode Forward Voltage	I_{SD} = 16mA, V_{GS} = 0V	-	-	1.5	V
trr	Reverse Recovery Time	I_F = 1A, V_{GS} = 0V dI/d_t = 100A/μs	-	200	-	ns
Qrr	Reverse Recovery Charge		-	320	-	nC

Notes:

1. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided
2. Device mounted on 1” x 1” FR-4 PCB with high coverage 2 oz. copper, single sided
3. Repetitive rating, pulse width limited by junction temperature, 10μs pulse, duty cycle = 1%
4. Short duration pulse test used to minimize self-heating effect
5. Guaranteed by design. Not subject to production testing

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

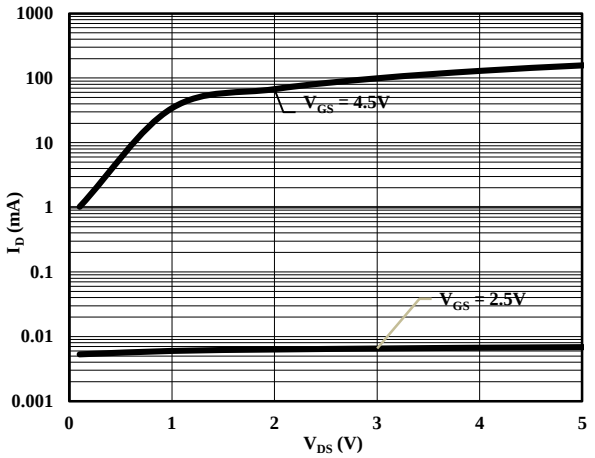


Fig 1 On-Region Characteristics

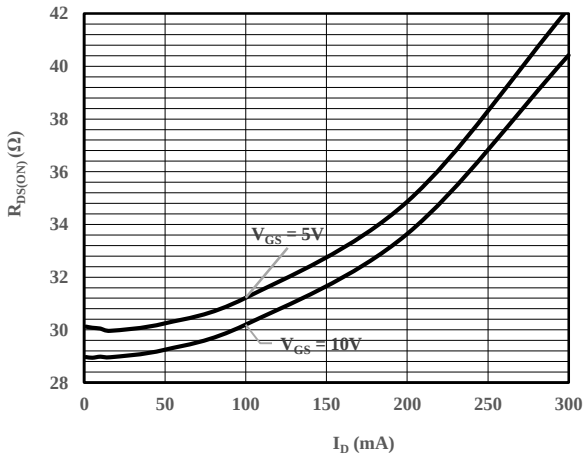


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

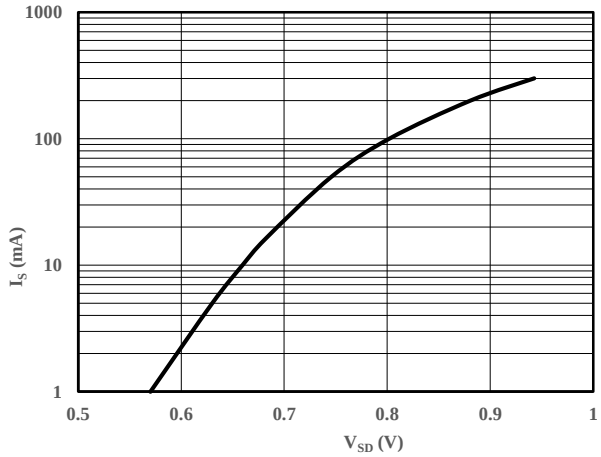
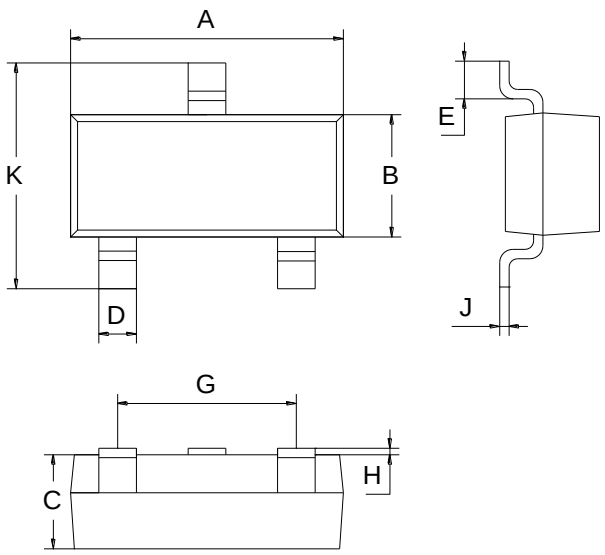


Fig 3 Body-Diode Characteristics

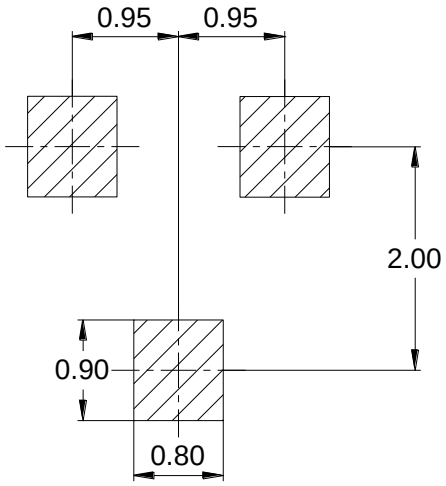
Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Mounting Pad Layout (Unit: mm)

SOT-23



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