Silicon N-Channel Power MOSFET

BL126E

Features

- ESD improved capability
- Depletion-mode (normally-on)

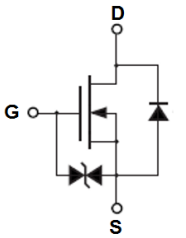
HF

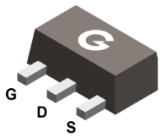
Typical Applications

- Power switch circuit of adaptor and charger

Mechanical Data

- Case: SOT-89
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208





SOT-89

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL126E	SOT-89	1000 pcs / Tape & Reel	126

Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSX}	600	V
Gate -Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (T_C = 25°C)	I_D	0.04	A
Continuous Drain Current (T_C = 70°C)		0.032	A
Pulsed Drain Current	I_{DM}	0.16	A
Gate Source ESD(HBM-C = 100pF, R = 1.5kΩ)	$V_{ESD(G-S)}$	300	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	1	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	50	°C/W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	125	°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
Off Characteristics						
BV_{DSX}	Drain-to-Source Breakdown Voltage	V_{GS} = -5V, I_D = 250μA	600	-	-	V
$I_{D(OFF)}$	Off-state Drain-to-Source Current	V_{DS} = 600V, V_{GS} = -5V	-	-	0.1	μA
I_{GSS}	Gate-to-Source Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±10	μA
On Characteristics						
I_{DSS}	Saturated Drain-to-Source Current	V_{GS} = 0V, V_{DS} = 25V	12	-	-	mA
$R_{DS(ON)}$	Drain-to-Source On-resistance *2	V_{GS} = 0V,I_D = 3mA	-	-	700	Ω
		V_{GS} = 10V,I_D = 16mA	-	-	800	Ω
$V_{GS(OFF)}$	Gate-to-Source Cut-off Voltage	V_{DS} = 3V, I_D = 8μA	-2.7	-2	-1.0	V
gfs	Forward Transconductance	V_{DS} = 50V, I_D = 10mA	-	17	-	mS
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = -5V V_{DS} = 25V f = 1.0MHz	-	50	-	pF
C_{OSS}	Output Capacitance		-	4.53	-	
C_{RSS}	Reverse Transfer Capacitance		-	1.08	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time *3	V_{DD} = 300V V_{GS} = -5V~7V R_G = 6Ω I_D = 10mA	-	9.9	-	ns
t_r	Turn-on Rise Time *3		-	55.8	-	
$t_{d(OFF)}$	Turn-Off Delay Time *3		-	56.4	-	
t_f	Turn-Off Fall Time *3		-	136	-	
Q_G	Total Gate-Charge	V_{DD} = 400V V_{GS} = -5V~5V I_D = 10mA	-	1.14	-	nC
Q_{GS}	Gate to Source Charge		-	0.5	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	0.37	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *2	I_{SD} = 16mA, V_{GS} = -5V	-	-	1.2	V
trr	Reverse Recovery Time	I_{SD} = 10mA, V_{GS} = 0V di/dt = 100A/μs	-	243	-	ns
Qrr	Reverse Recovery Charge		-	636	-	nC
Gate-source Zener Diode						
V_{GSO}	Gate-source Breakdown Voltage	I_{GS} = ±1mA(Open Drain)	20	-	-	V

Notes:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
3. Guaranteed by design, not subject to production

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

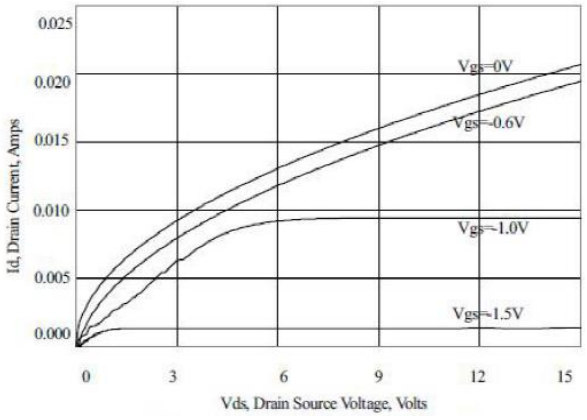


Fig 1 Typical Output Characteristics

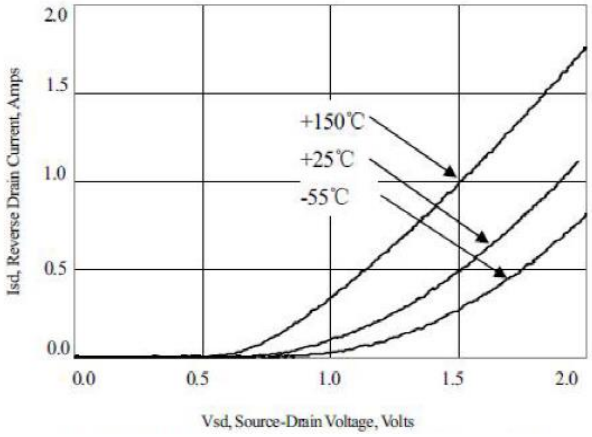


Fig 2 Body-Diode Characteristics

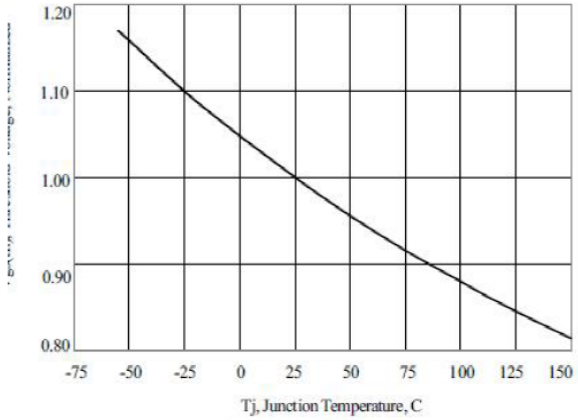


Fig 3 Normalized $V_{GS(th)}$ vs. Junction Temperature

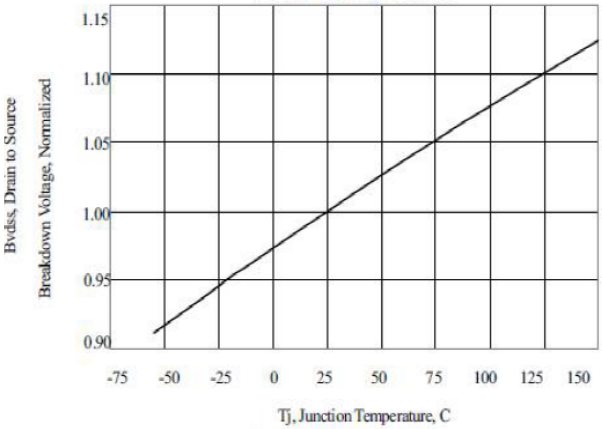


Fig 4 Normalized Breakdown Voltage vs. Junction Temperature

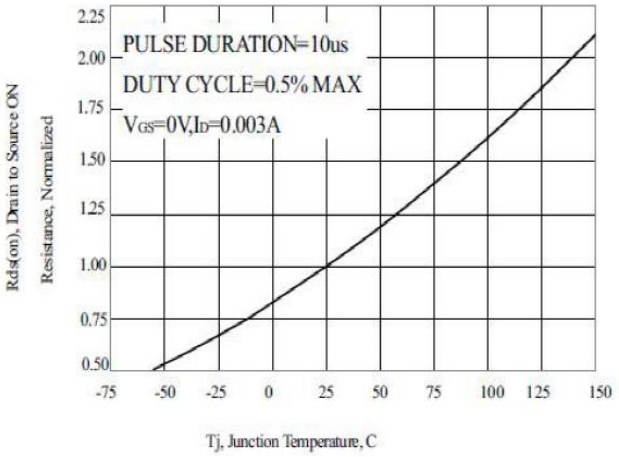


Fig 5 Normalized On-Resistance vs. Junction Temperature

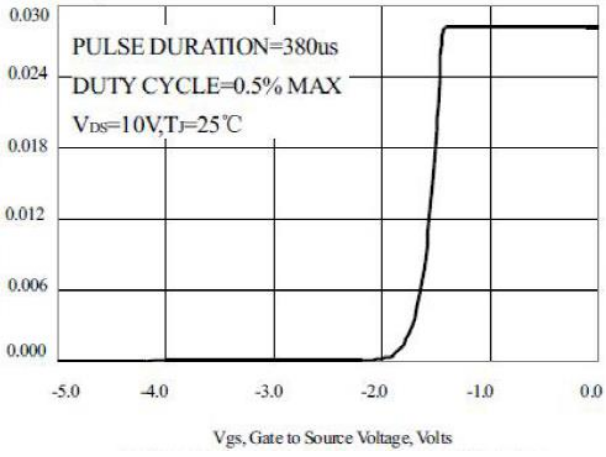


Fig 6 Transfer Characteristics

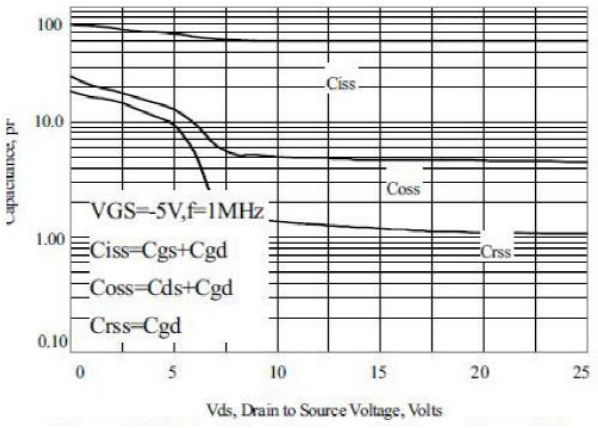


Fig 7 Capacitance Characteristics

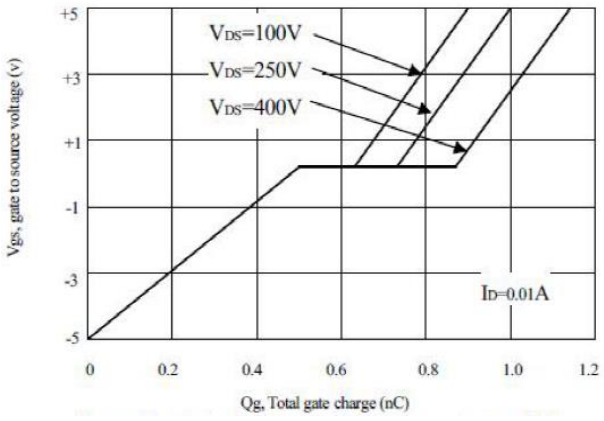
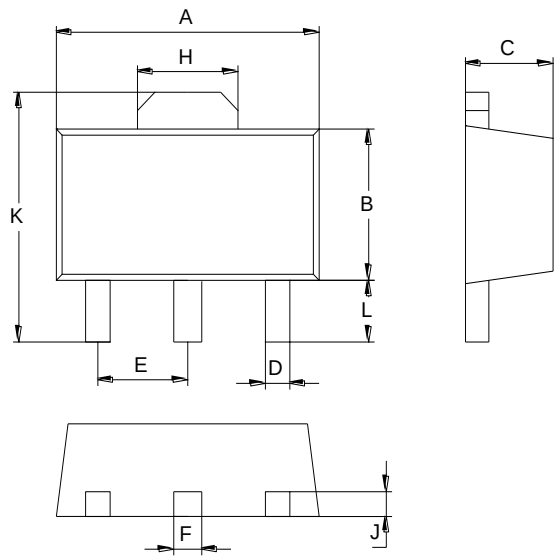


Fig 8 Gate-Charge Characteristics

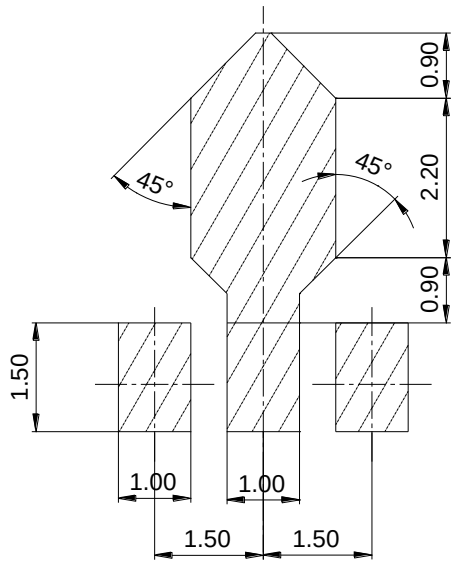
Package Outline Dimensions (Unit: mm)



SOT-89		
Dimension	**Min.**	**Max.**
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

SOT-89



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