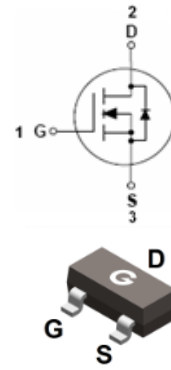


Features

- Advanced trench technology
- Low input capacitance
- High V_{DSS} rating for power application
- Low input / output leakage
- RoHS compliant with Halogen-free

HF



SOT-23

Mechanical Data

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

Ordering Information

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

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ 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 ($T_A = 25^\circ\text{C}$) ^{*1}	I_D	60	mA
Continuous Drain Current ($T_A = 70^\circ\text{C}$) ^{*1}		48	mA
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_A = 25^\circ\text{C}$)	I_{DM}	240	mA
Power Dissipation ($T_A = 25^\circ\text{C}$) ^{*1}	P_D	1.25	W
Power Dissipation ($T_A = 25^\circ\text{C}$) ^{*2}		0.61	W
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	-	70	100	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Air ^{*2}		-	-	204	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	600	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600V, V_{GS} = 0V$	-	-	0.1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *3	$V_{GS} = 10V, I_D = 16mA$	-	30	160	Ω
		$V_{GS} = 5V, I_D = 16mA$	-	31	190	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
R_G	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	120	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	36	-	pF
C_{OSS}	Output Capacitance	$V_{DS} = 25V$	-	6	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 1.0MHz$	-	0.8	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time *4	$V_{DD} = 100V$ $V_{GS} = 10V$ $R_G = 25\Omega$ $I_D = 0.2A$	-	30	-	ns
t_r	Turn-on Rise Time *4		-	10	-	
$t_{d(OFF)}$	Turn-Off Delay Time *4		-	53	-	
t_f	Turn-Off Fall Time *4		-	18	-	
Q_G	Total Gate-Charge	$V_{DD} = 300V$	-	0.65	-	nC
Q_{GS}	Gate to Source Charge	$I_D = 0.01A$	-	0.07	-	
Q_{GD}	Gate to Drain (Miller) Charge	$V_{GS} = 10V$	-	0.31	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *3	$I_{SD} = 16mA, V_{GS} = 0V$	-	0.7	1.5	V
t_{rr}	Reverse Recovery Time	$I_F = 16mA, V_{GS} = 0V$	-	160	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt = 100A/\mu s$	-	13.2	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. The data tested by surface mounted on a minimum recommended FR-4 board
3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. Guaranteed by design, not subject to production

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

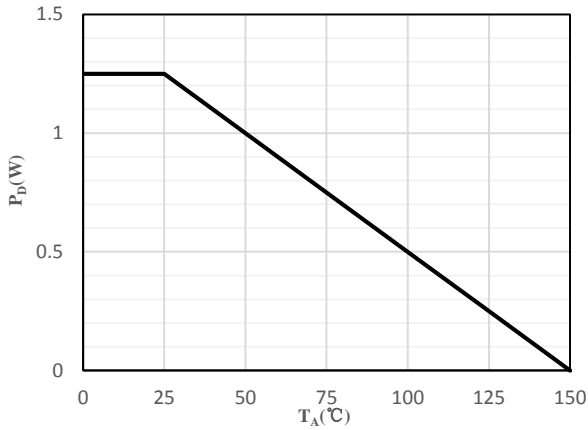


Fig 1 Power Dissipation

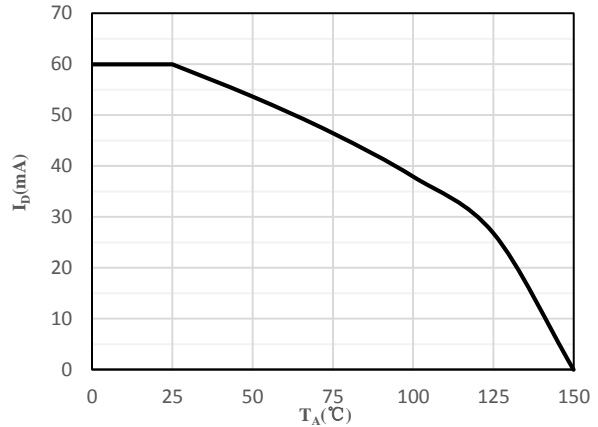


Fig 2 Drain Current

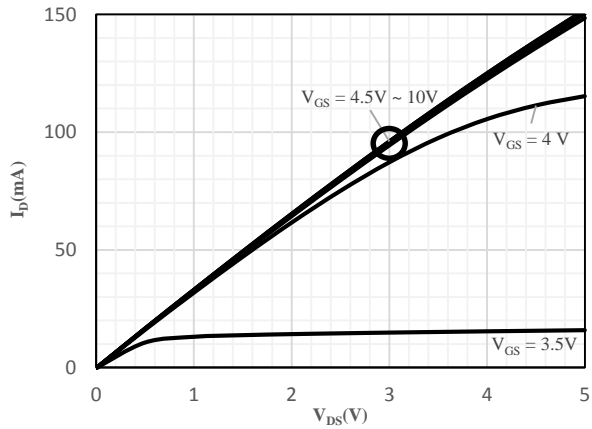


Fig 3 Typical Output Characteristics

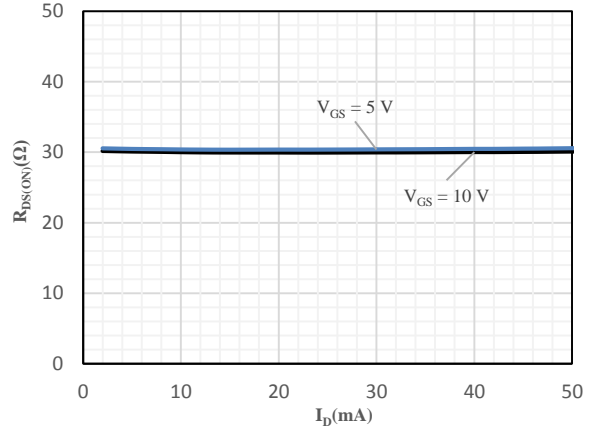


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

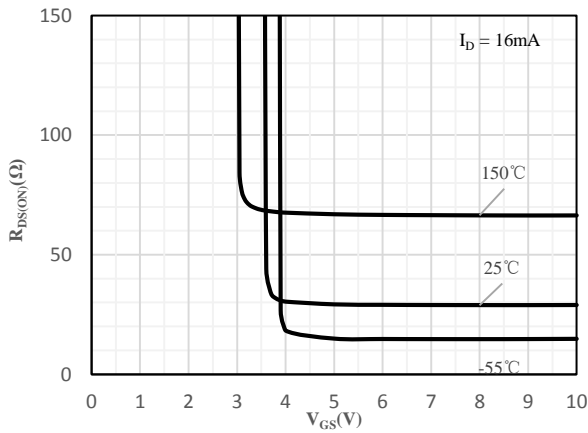


Fig 5 On-Resistance vs. Gate-Source Voltage

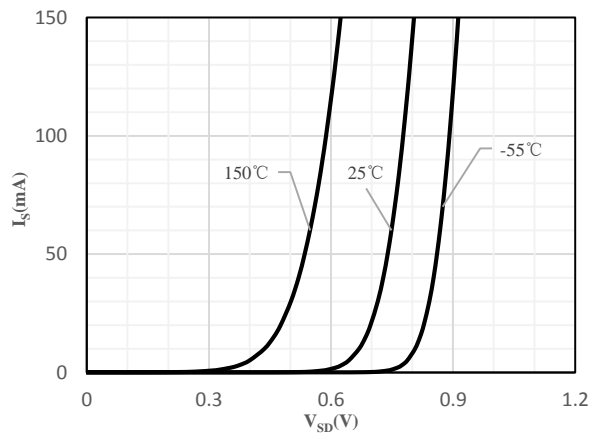


Fig 6 Body-Diode Characteristics

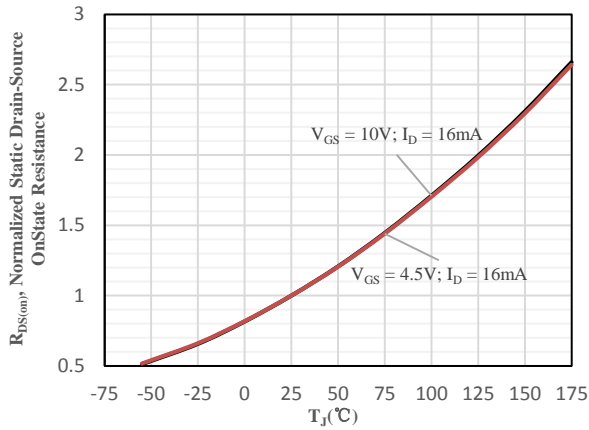


Fig 7 Normalized On-Resistance vs. Junction Temperature

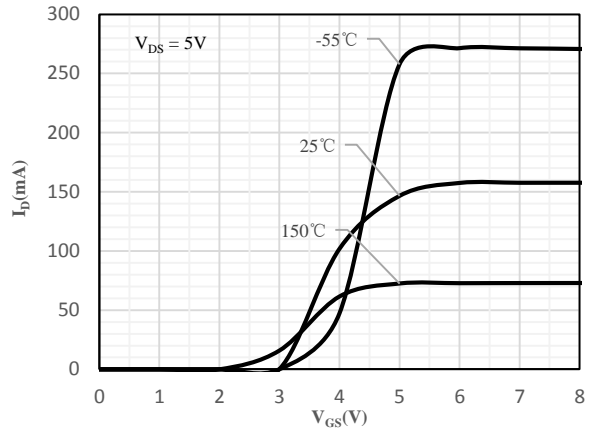


Fig 8 Transfer Characteristics

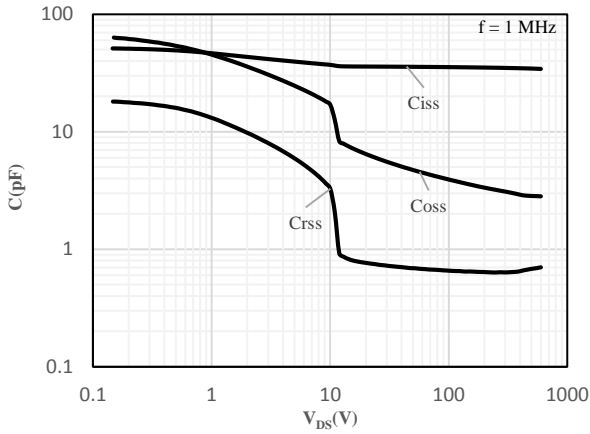


Fig 9 Capacitance Characteristics

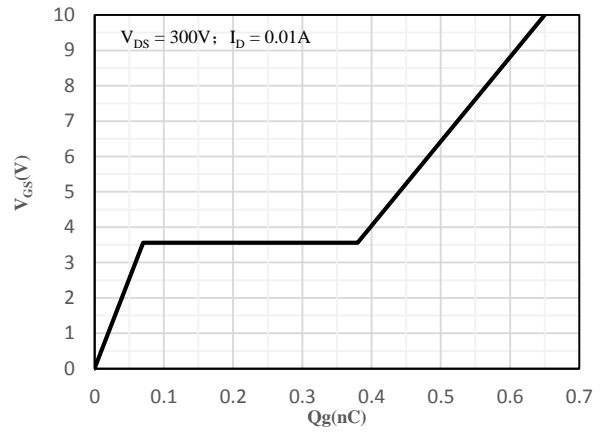


Fig 10 Gate-Charge Characteristics

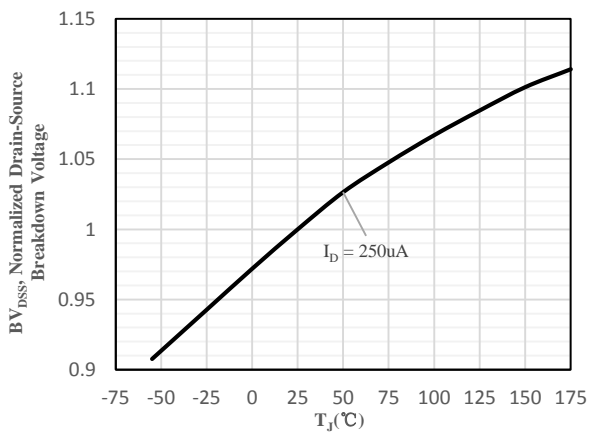


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

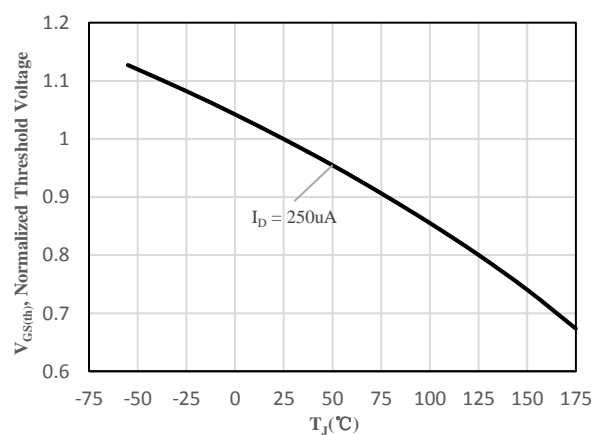


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

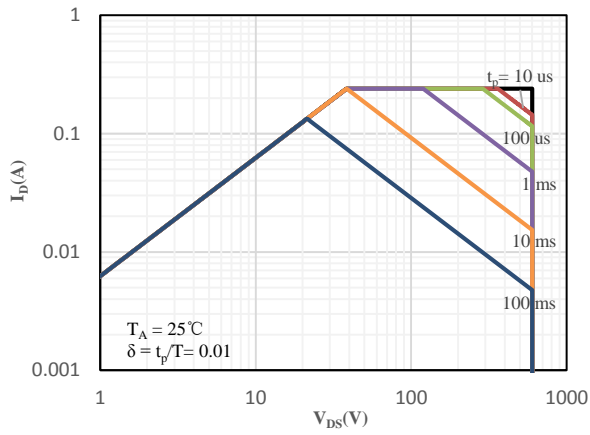


Fig 13 Safe Operating Area

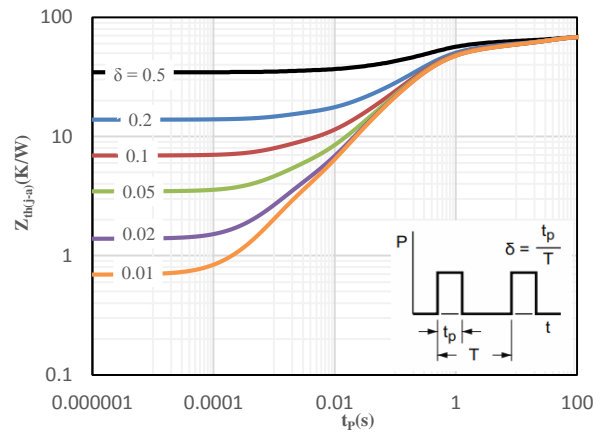
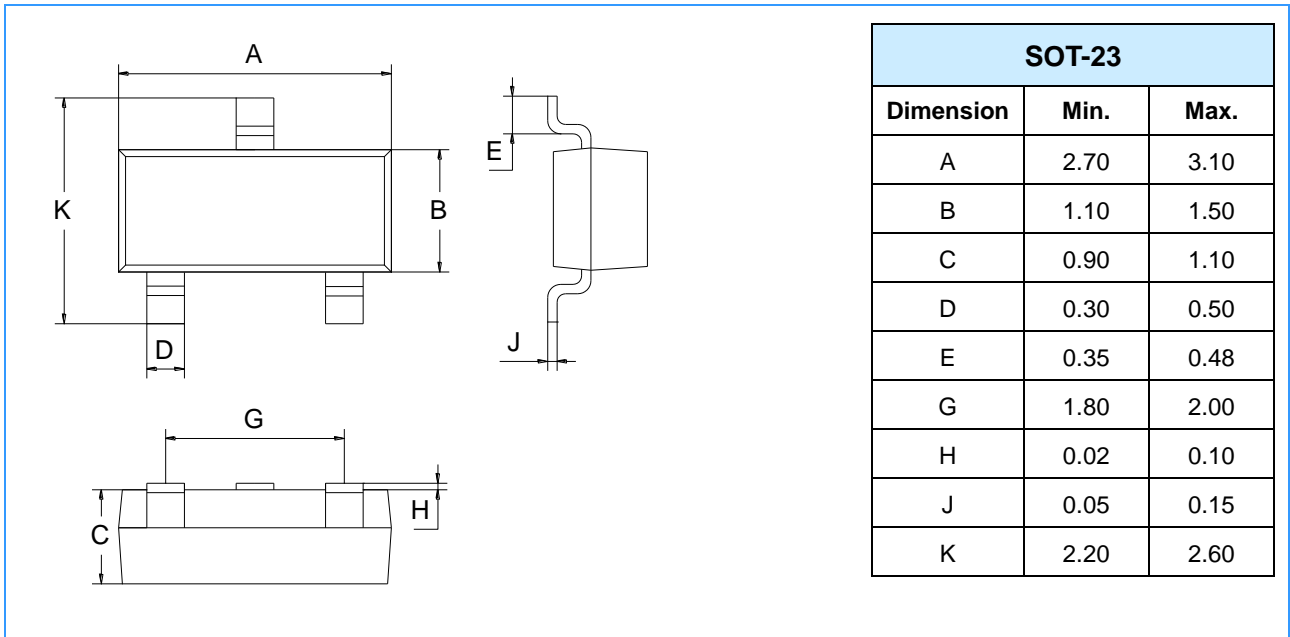


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)

