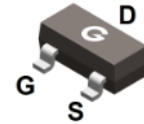
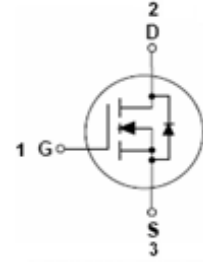


Features

- Advanced planar technology
- Low input capacitance
- High V_{DS} rating for power application
- Low input / output leakage
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

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
TBSS127	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_{DS}	600	V
Gate-to-Source Voltage	V_{GS}	± 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	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Thermal Characteristics

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

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 = 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						
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 = 250μA	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	-	30	-	ns
t _r	Turn-on Rise Time *4	V _{GS} = 10V	-	10	-	
t _{d(OFF)}	Turn-Off Delay Time *4	R _G = 25Ω	-	53	-	
t _f	Turn-Off Fall Time *4	I _D = 0.2A	-	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/μs	-	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)

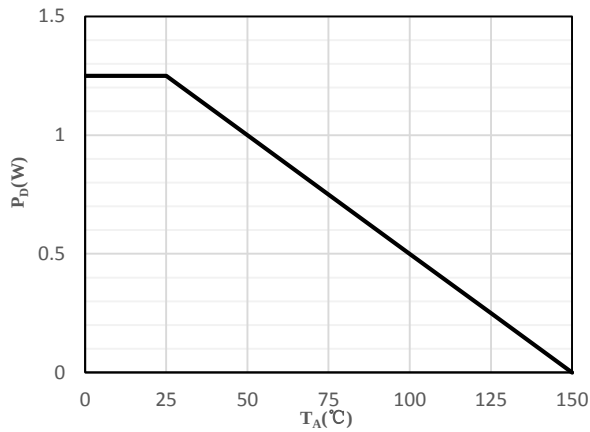


Fig 1 Power Dissipation

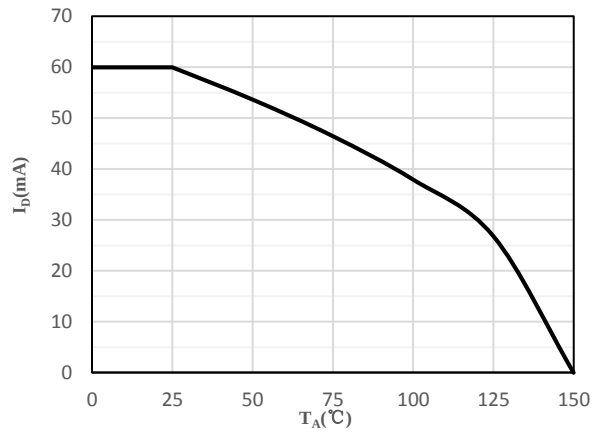


Fig 2 Drain Current

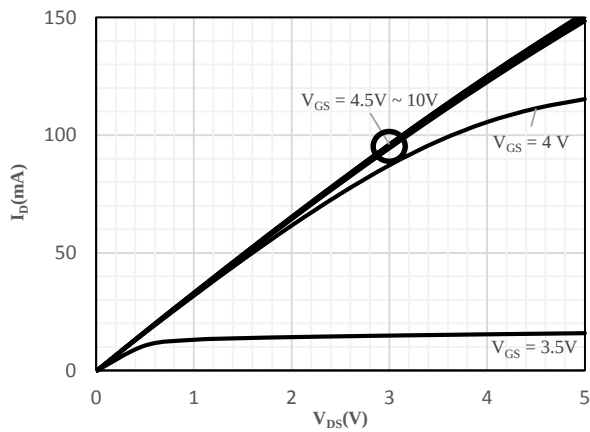


Fig 3 Typical Output Characteristics

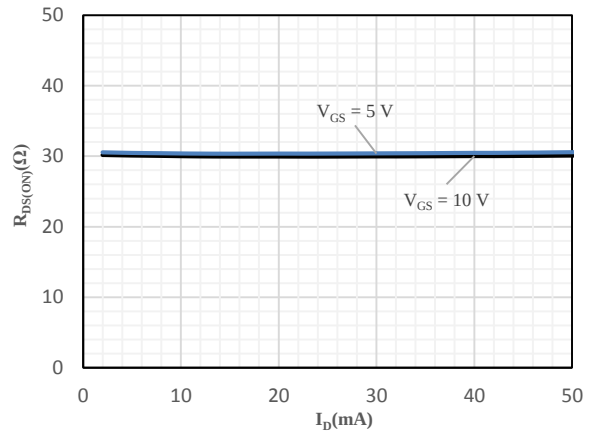


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

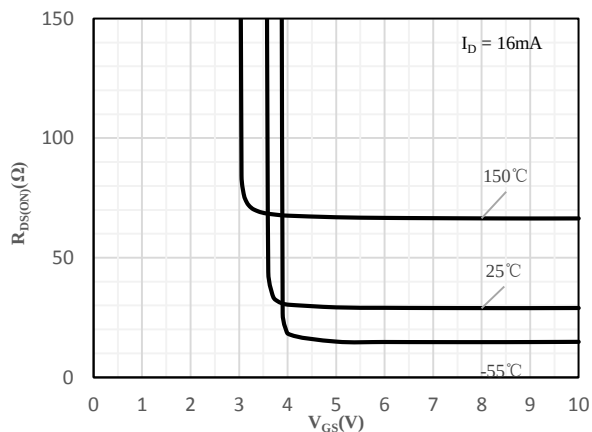


Fig 5 On-Resistance vs. Gate-Source Voltage

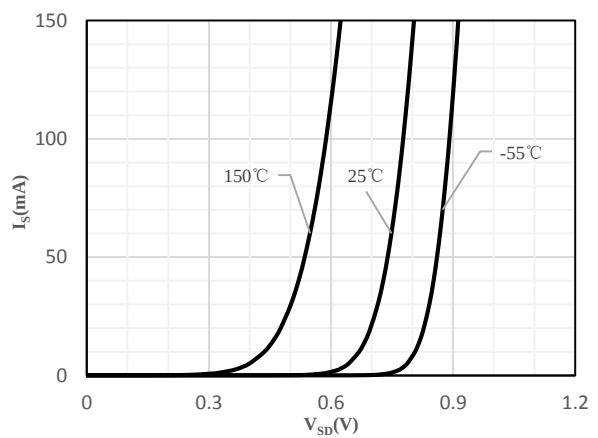


Fig 6 Body-Diode Characteristics

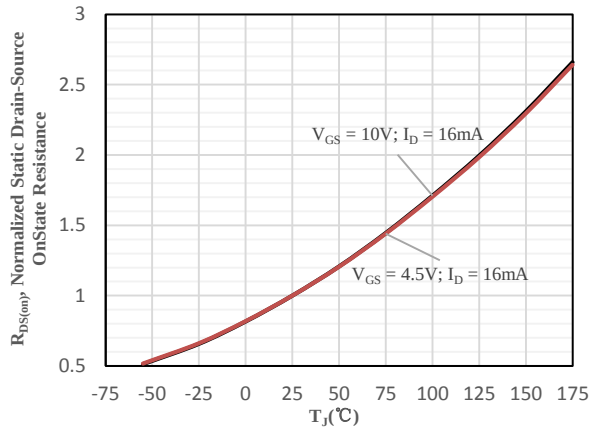


Fig 7 Normalized On-Resistance vs. Junction Temperature

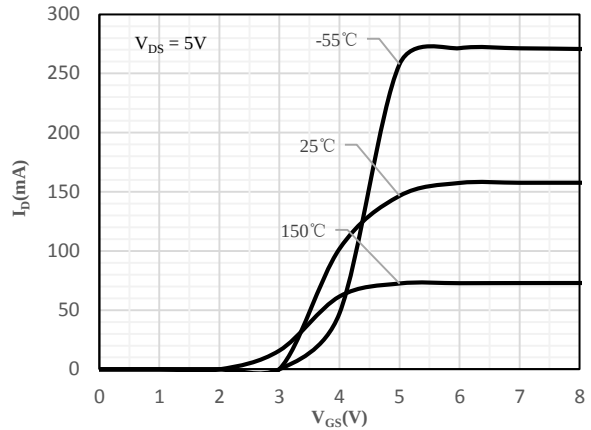


Fig 8 Transfer Characteristics

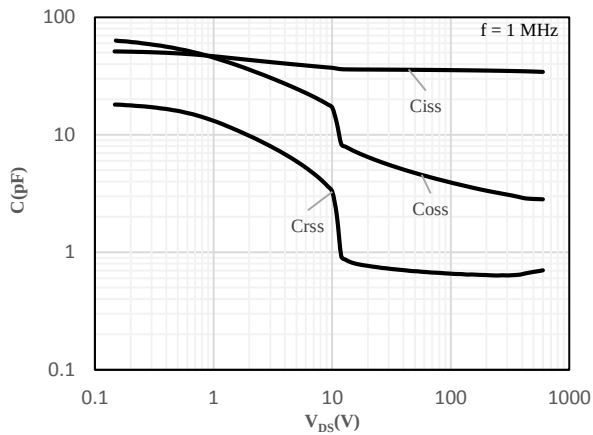


Fig 9 Capacitance Characteristics

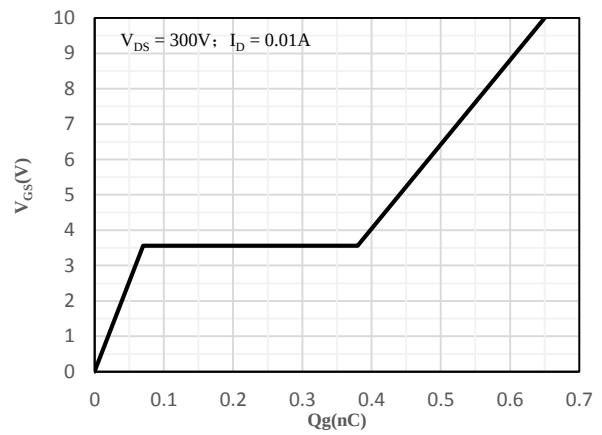


Fig 10 Gate-Charge Characteristics

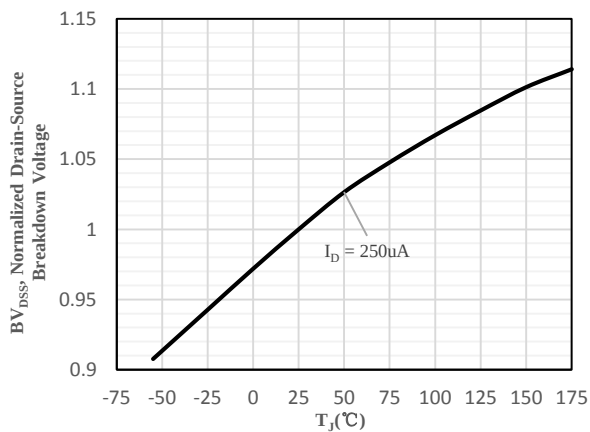


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

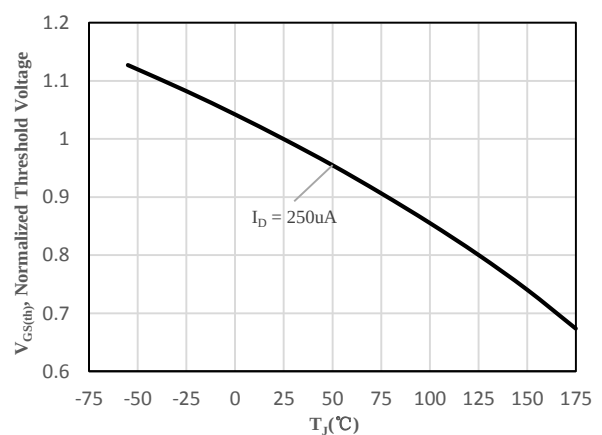


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

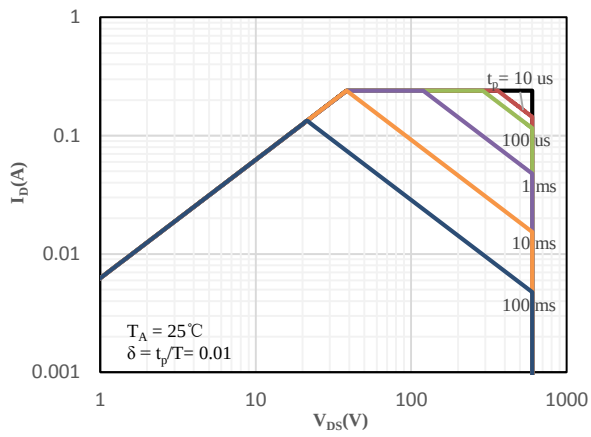


Fig 13 Safe Operating Area

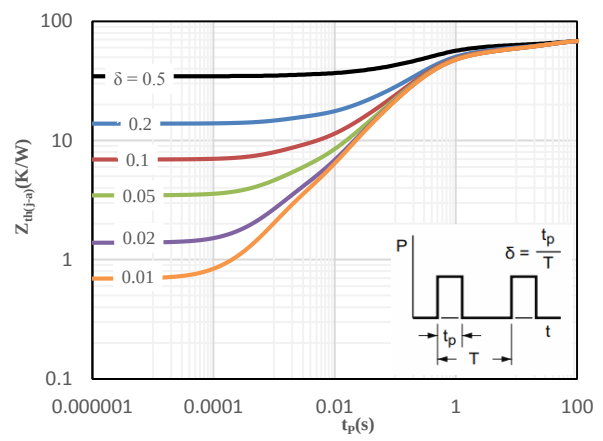
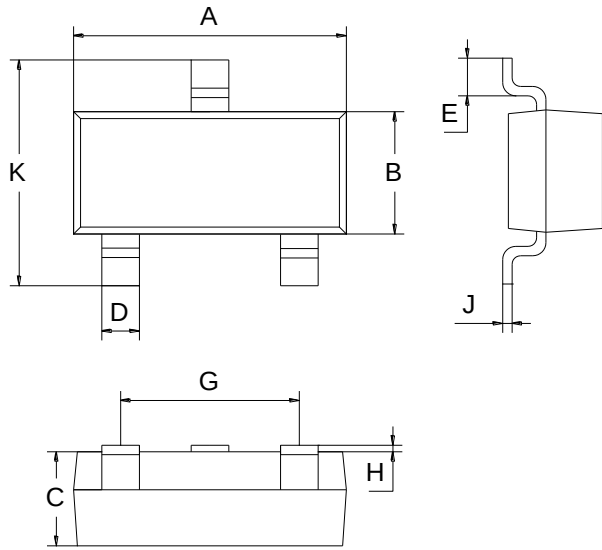


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



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

