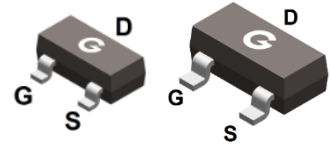
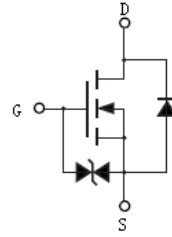


Features

- Advanced trench technology
- ESD Protected
- $R_{DS(ON)}$ @ $V_{GS} = 10V$, $I_D = 4.2A < 42m\Omega$
- $R_{DS(ON)}$ @ $V_{GS} = 4.5V$, $I_D = 3.5A < 48m\Omega$
- $R_{DS(ON)}$ @ $V_{GS} = 2.5V$, $I_D = 2.8A < 55m\Omega$
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF



SOT-23

SOT-23-3L

APPLICATIONS

- Specially designed for switch Load, PWM application, etc.

Mechanical Data

- Case: SOT-23, SOT-23-3L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBL3422	SOT-23	3000 pcs / Tape & Reel	3422
TBL3422-3L	SOT-23-3L	3000 pcs / Tape & Reel	3422

Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	30	V
Gate-to-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current ($T_A = 25^\circ C$)	I_D	4.2	A
Pulsed Drain Current	I_{DM}	16.8	A
Single Pulse Avalanche Energy ^{*1}	E_{AS}	4.5	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D^{*3}	1.25	W
		1.3	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}^{*3}$	100	$^\circ C/W$
		96	$^\circ C/W$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	65	$^\circ C/W$
		63	$^\circ C/W$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ C$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ C$

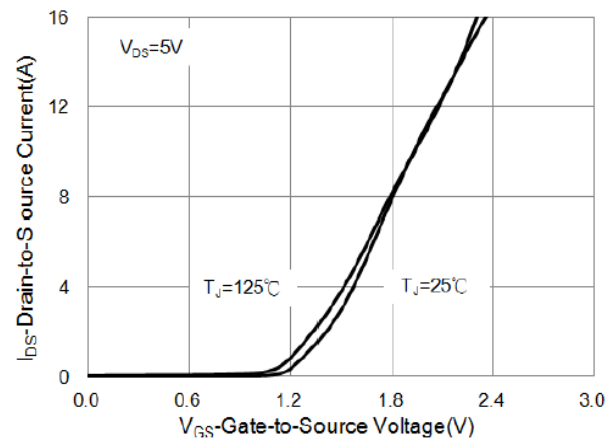
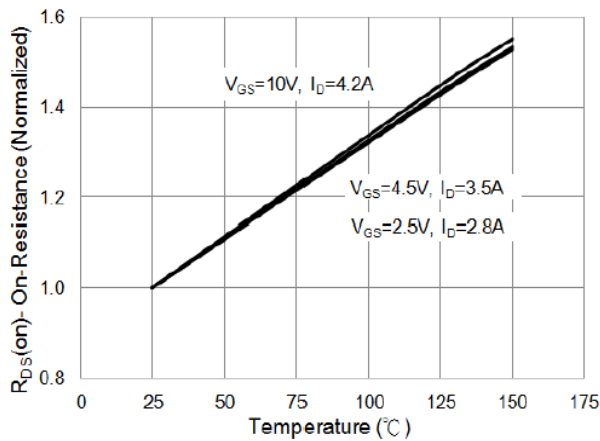
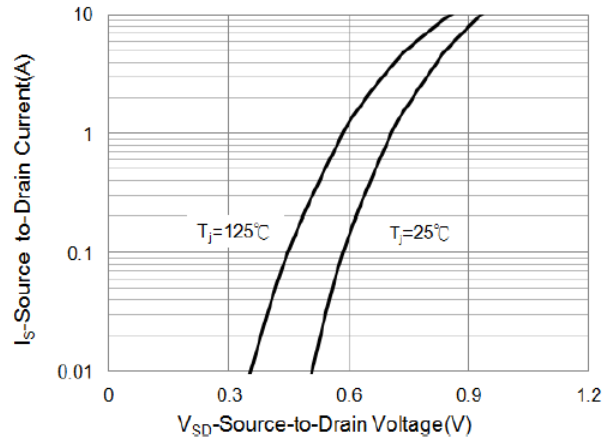
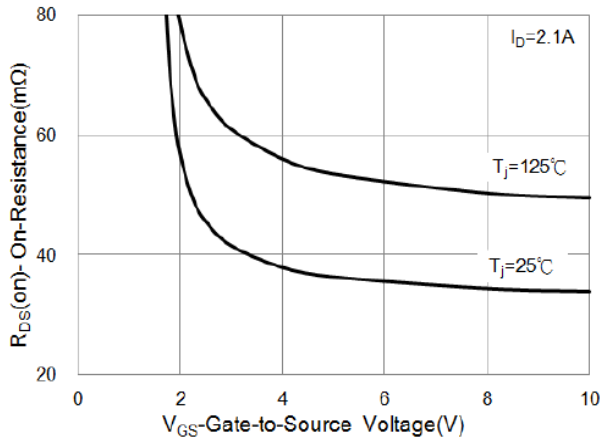
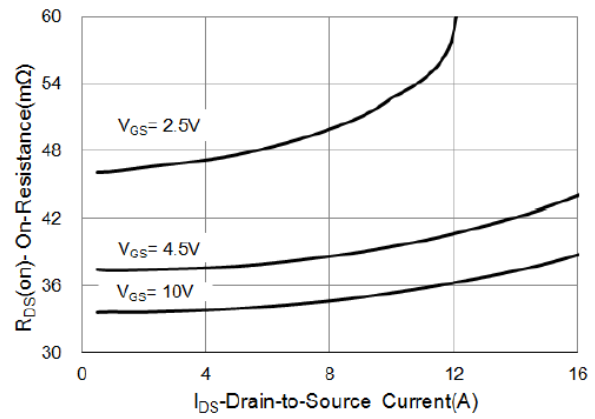
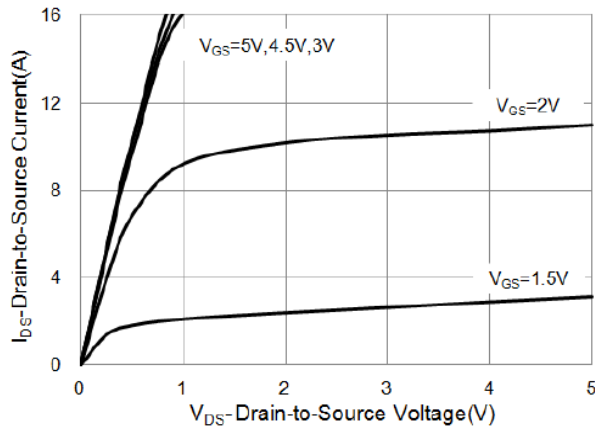
Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 24V, V _{GS} = 0V	-	-	1	μA
		V _{DS} = 24V, V _{GS} = 0V, T _J = 85°C	-	-	30	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±10V, V _{DS} = 0V	-	-	±10	μA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *2	V _{GS} = 10V, I _D = 4.2A	-	-	42	mΩ
		V _{GS} = 4.5V, I _D = 3.5A	-	-	48	mΩ
		V _{GS} = 2.5V, I _D = 2.8A	-	-	55	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.3	0.7	1.3	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz	-	421	-	pF
C _{OSS}	Output Capacitance		-	43	-	
C _{RSS}	Reverse Transfer Capacitance		-	35	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = 15V V _{GS} = 10V R _G = 3Ω I _D = 1A	-	11	-	ns
t _r	Turn-on Rise Time *4		-	7.4	-	
t _{d(OFF)}	Turn-Off Delay Time *4		-	35	-	
t _f	Turn-Off Fall Time *4		-	9.1	-	
Q _G	Total Gate-Charge	V _{DD} = 15V V _{GS} = 4.5V I _D = 4.2A	-	5.1	-	nC
Q _{GS}	Gate to Source Charge		-	0.8	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	1.4	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 1A, V _{GS} = 0V	-	0.77	1.2	V

Notes:

1. The E_{AS} test condition is $V_{DD} = 20V, L = 0.5\text{mH}, V_{GS} = 6V$, Starting $T_J = 25^\circ\text{C}$
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. Surface mounted on 1 inch² FR-4 board with 2OZ copper
4. Guaranteed by design, not subject to production testing

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



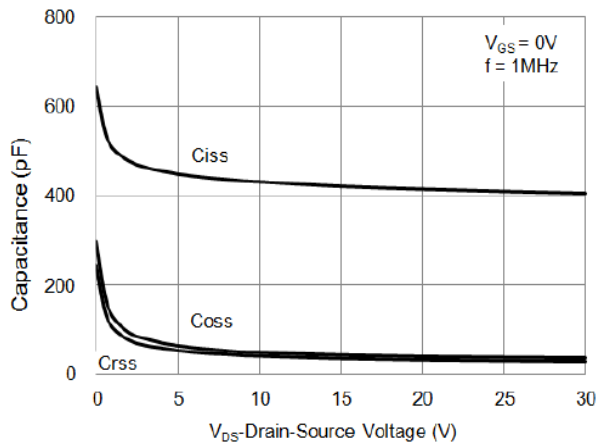


Fig 7 Capacitance Characteristics

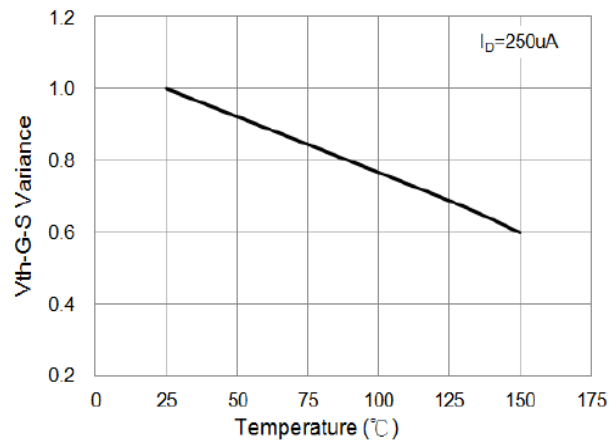


Fig 8 Gate Voltage vs. Junction Temperature

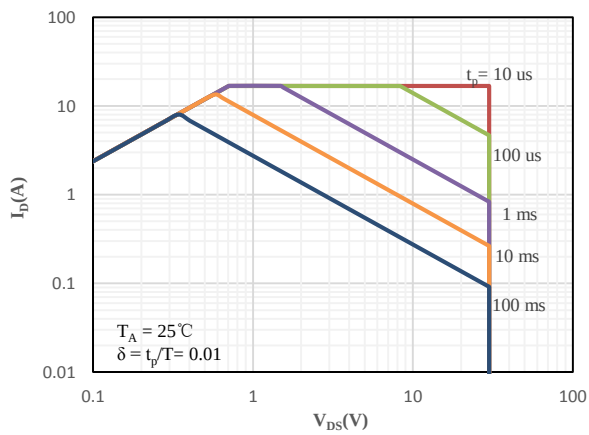


Fig 9 Safe Operation Area

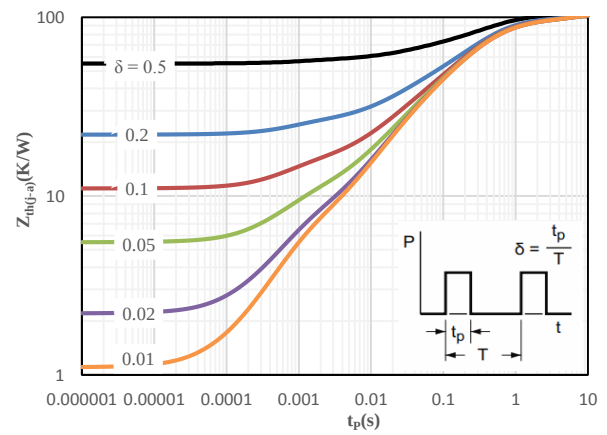
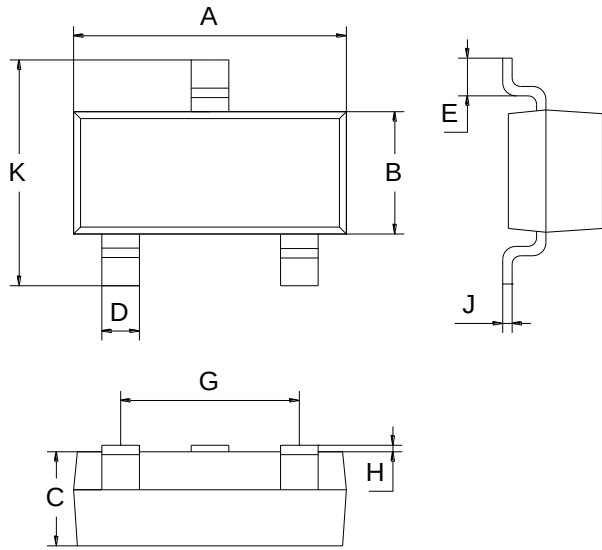
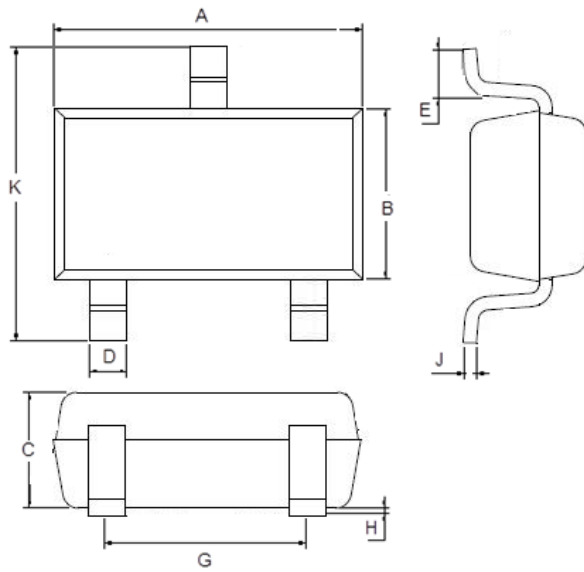


Fig 10 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



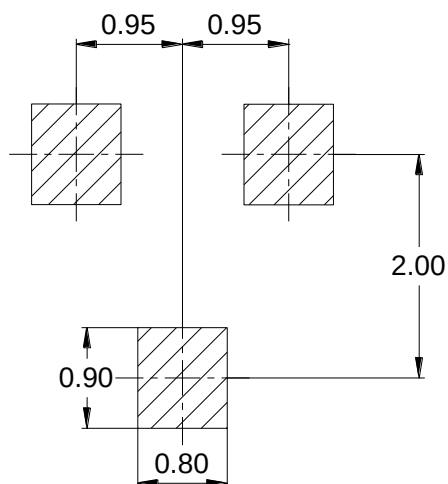
SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60



SOT-23-3L		
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
G	1.80	2.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

Mounting Pad Layout (Unit: mm)

SOT-23



SOT-23-3L

