

Features

- Low On-Resistance
- Low threshold
- Fast switching speed
- Low gate drive
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

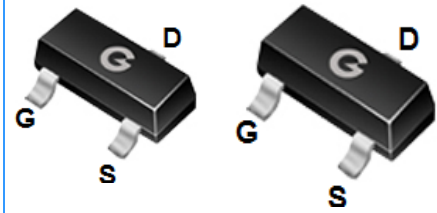
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Typical Applications

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

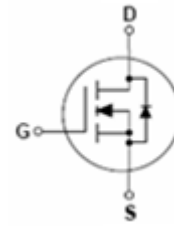
Mechanical Data

- 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



TBL02N06C
SOT-23

TBL02N06C-3L
SOT-23-3L



Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBL02N06C	SOT-23	3000pcs / Tape & Reel	02N06
TBL02N06C-3L	SOT-23-3L	3000pcs / Tape & Reel	02N06

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	60	V
Gate-to-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	2	A
Pulsed Drain Current	I _{DM}	8	A

Thermal Characteristics

Parameter		Symbol	Value	Unit
Power Dissipation	SOT-23	P_D	0.35	W
	SOT-23-3L		0.35	
Thermal Resistance Junction-to-Air	SOT-23	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
	SOT-23-3L		357	
Thermal Resistance Junction-to-Lead	SOT-23	$R_{\theta JL}$	214	$^{\circ}\text{C/W}$
	SOT-23-3L		214	
Thermal Resistance Junction-to-Case	SOT-23	$R_{\theta JC}$	180	$^{\circ}\text{C/W}$
	SOT-23-3L		180	
Operating Junction Temperature Range		T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V	-	-	1000	nA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics *1						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} = 10V, I _D = 2A	-	-	115	mΩ
		V _{GS} = 4.5V, I _D = 2A	-	-	140	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	0.8	1	2	V
g _{FS}	Forward Transconductance	V _{DS} = 15V, I _D = 2A	-	4.9	-	S
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 40V f = 1.0MHz	-	520	-	pF
C _{OSS}	Output Capacitance		-	26	-	
C _{RSS}	Reverse Transfer Capacitance		-	15	-	
Q _G	Total Gate-Charge	V _{GS} = 10V V _{DS} = 30V I _D = 2A	-	15.5	-	nC
Q _{GS}	Gate to Source Charge		-	1.6	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	1.7	-	
t _{d(ON)}	Turn-on Delay Time	V _{GS} = 10V V _{DD} = 30V I _D = 2A R _G = 6Ω	-	1.95	-	ns
t _r	Turn-on Rise Time		-	3.5	-	
t _{d(OFF)}	Turn-Off Delay Time		-	8.2	-	
t _f	Turn-Off Fall Time		-	4.6	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _S = 2A, V _{GS} = 10V	-	-	2	V

Note 1: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

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

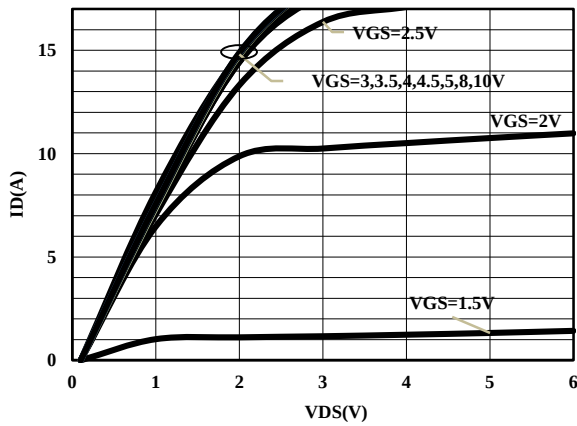


Fig.1- On-Region Characteristics

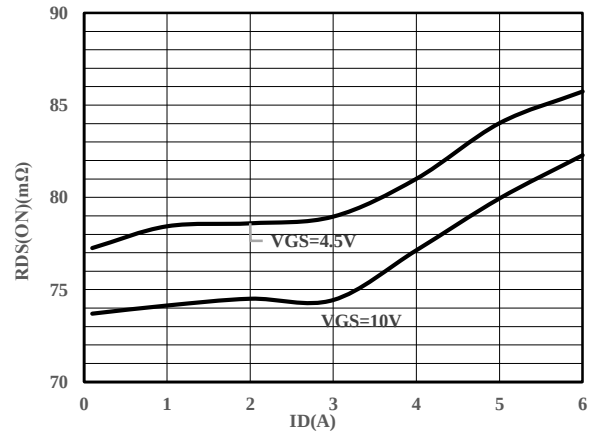


Fig.2-On-Resistance vs. Drain Current
and Gate Voltage

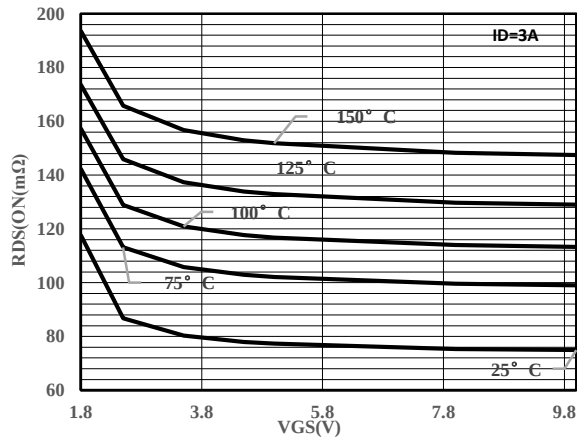


Fig.3-On-Resistance vs. Gate-Source Voltage

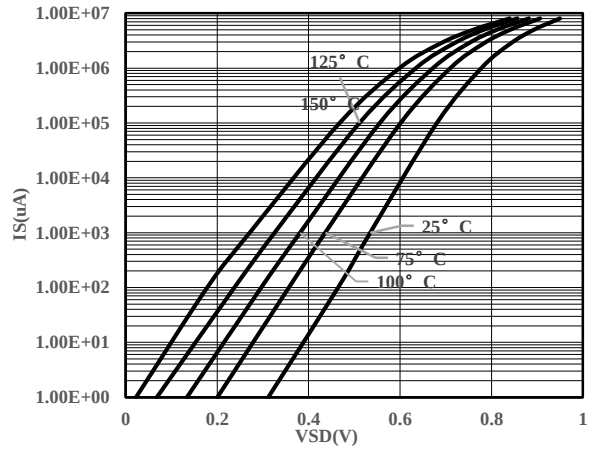


Fig.4- Body-Diode Characteristics

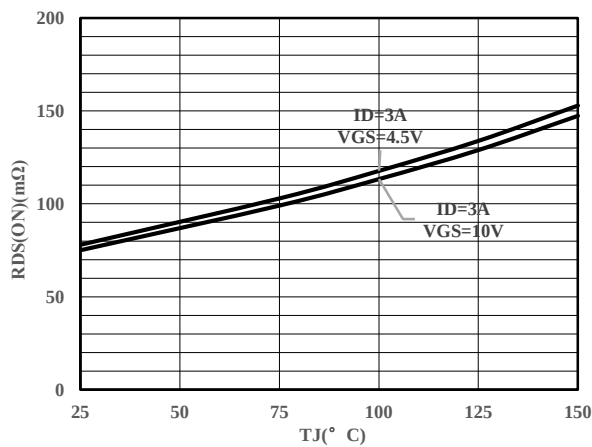


Fig.5-On-Resistance vs. Junction Temperature

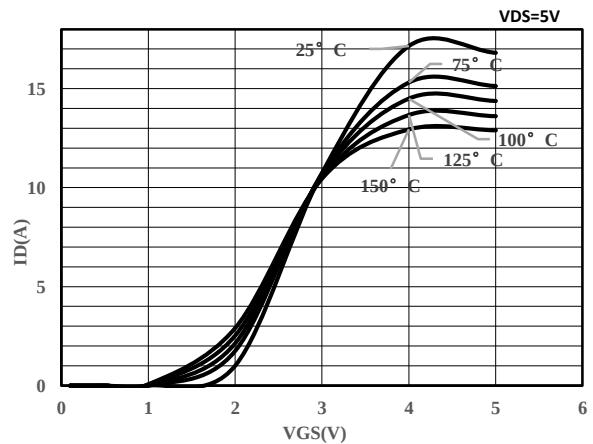


Fig.6-Transfer Characteristics

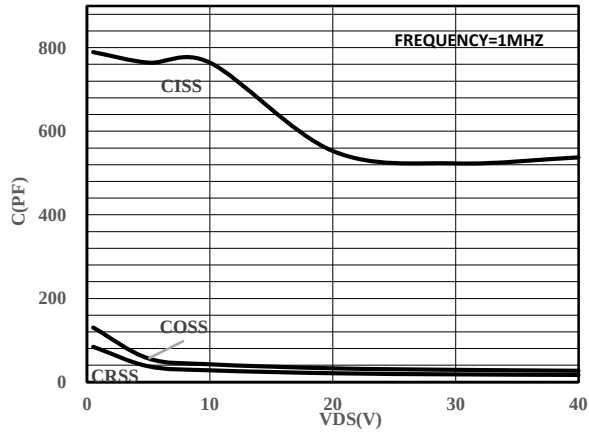


Fig.7-Capacitance Characteristics

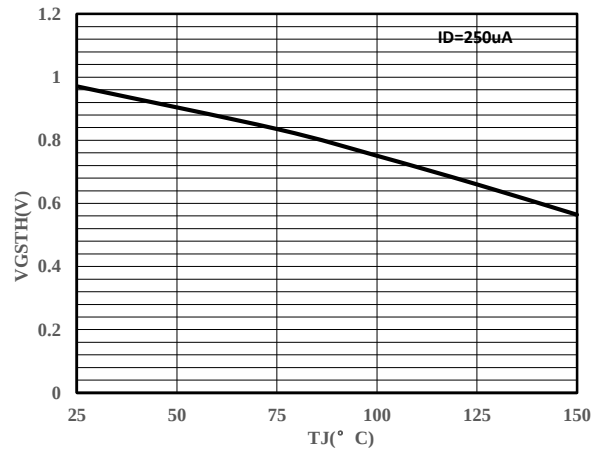


Fig.8- Gate Voltage vs. Junction Temperature

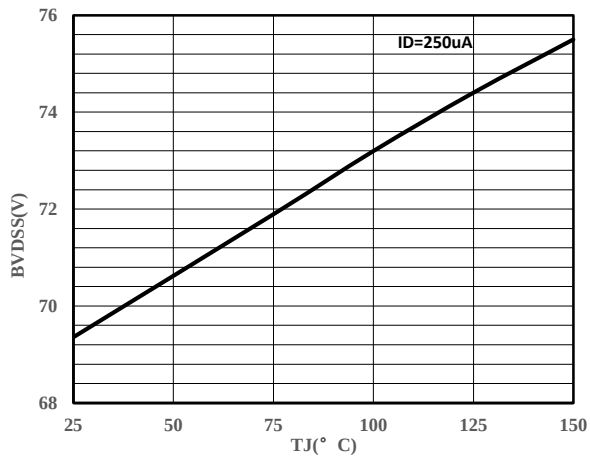
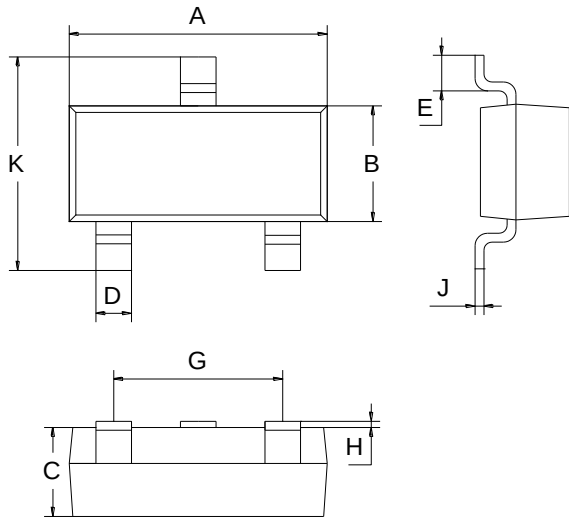
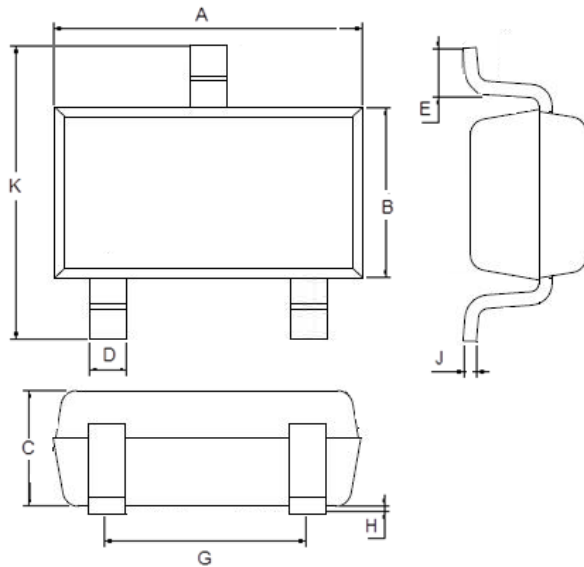


Fig.9- Drain-Source vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



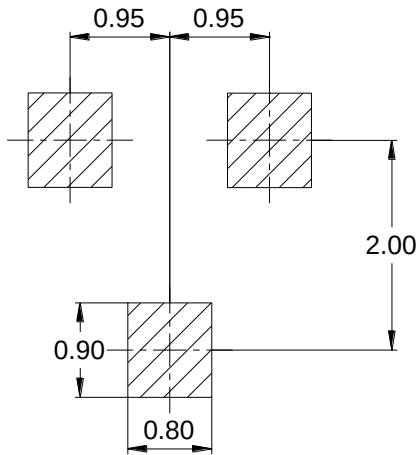
SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60



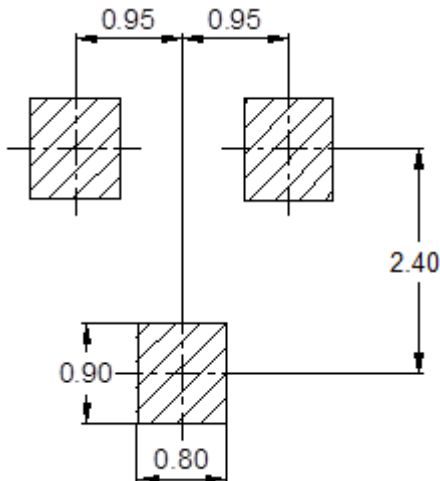
SOT-23-3L		
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
G	1.80	2.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

Mounting Pad Layout (Unit: mm)

SOT-23



SOT-23-3L



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