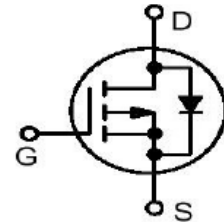


Features

- $R_{DS(ON)} \leq 130m\Omega$ @ $V_{GS} = -10V$
- $R_{DS(ON)} \leq 180m\Omega$ @ $V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 260m\Omega$ @ $V_{GS} = -2.5V$
- High-speed switching
- Drive circuits can be simple
- Parallel use is easy
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF

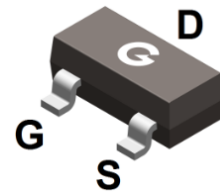


Typical Applications

- Power management in Note Book
- Switching application
- Battery powered system
- Load switch

Mechanical Data

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



SOT-23

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBL3403	SOT-23	3000 pcs / Tape & Reel	3403

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ 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	I_D	-2.6	A
Pulsed Drain Current	I_{DM}	-20	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ^{*1}	P_D	1	W
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	125	$^\circ\text{C/W}$
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	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -24V, V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±12V, V _{DS} = 0V	-	-	±100	nA
On Characteristics *2						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} = -10V, I _D = -2.6A	-	102	130	mΩ
		V _{GS} = -4.5V, I _D = -2A	-	128	180	mΩ
		V _{GS} = -2.5V, I _D = -1A		200	260	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.6	-1	-1.4	V
Dynamic Characteristics *3						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	389	-	pF
C _{OSS}	Output Capacitance	V _{DS} = -15V	-	65	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	55	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = -15V V _{GS} = -10V R _G = 1Ω R _L = 6Ω	-	5.3	-	ns
t _r	Turn-on Rise Time		-	4.4	-	
t _{d(OFF)}	Turn-Off Delay Time		-	31.5	-	
t _f	Turn-Off Fall Time		-	8	-	
Q _G	Total Gate-Charge	V _{GS} = -4.5V V _{DD} = -15V I _D = -2A	-	6.6	-	nC
Q _{GS}	Gate to Source Charge		-	1.2	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	1.8	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *1	I _{SD} = -1A, V _{GS} = 0V	-	-	-1	V

Notes:

1. Surface Mounted on 1 in2 copper pad of FR4 Board, $t \leq 10$ sec
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. Guaranteed by design, not subject to production

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

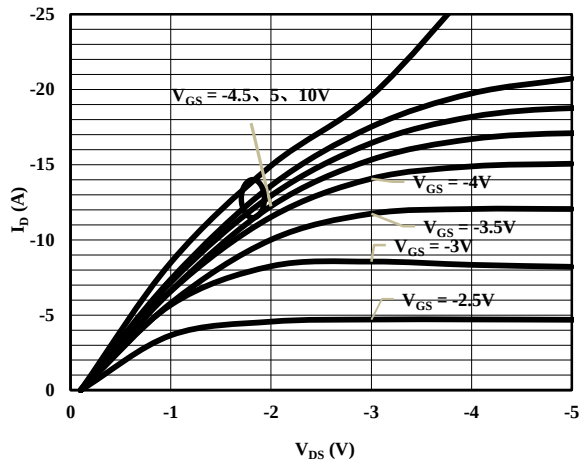


Fig 1 On-Region Characteristics

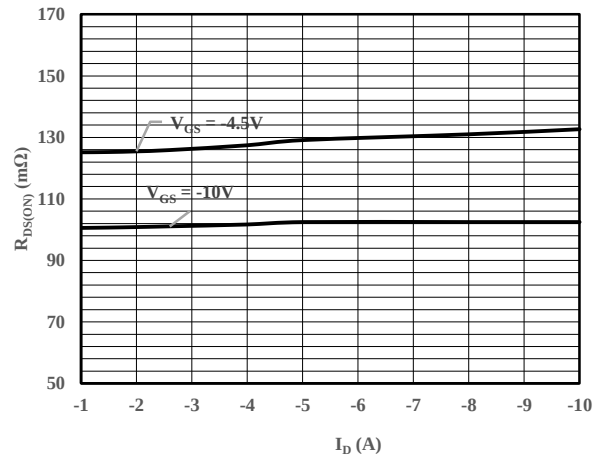


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

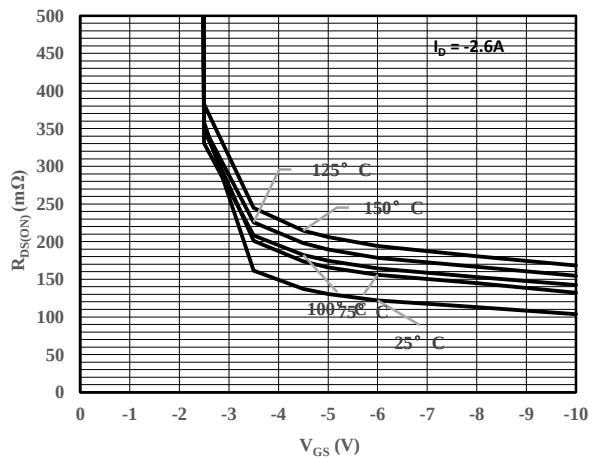


Fig 3 On-Resistance vs. Gate-Source Voltage

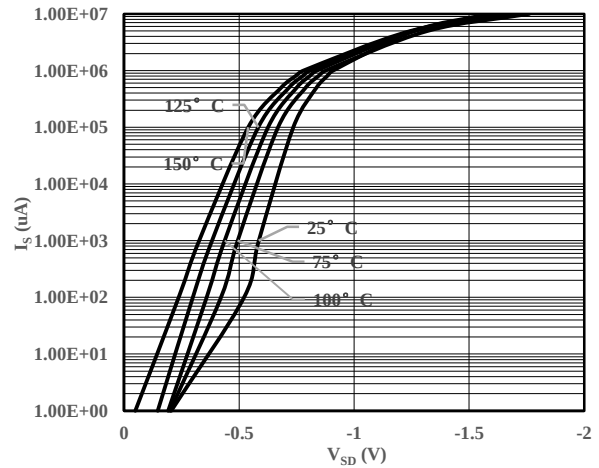


Fig 4 Body-Diode Characteristics

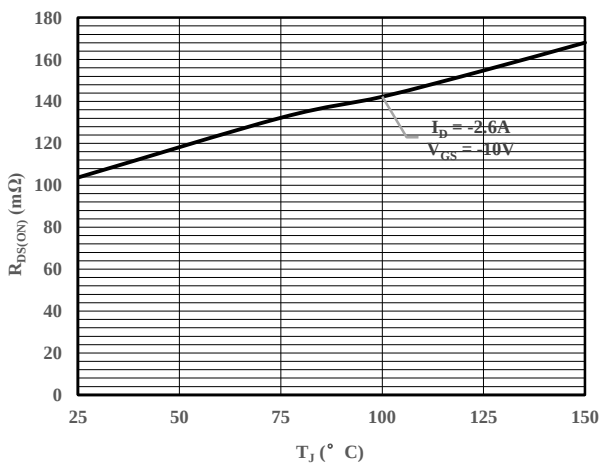


Fig 5 On-Resistance vs. Junction Temperature

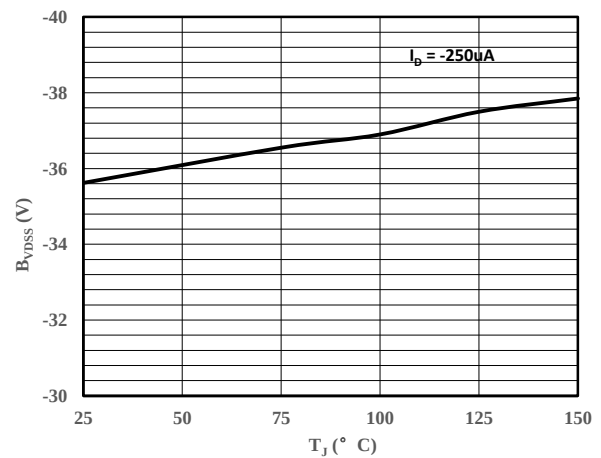


Fig 6 Drain-Source vs. Junction Temperature

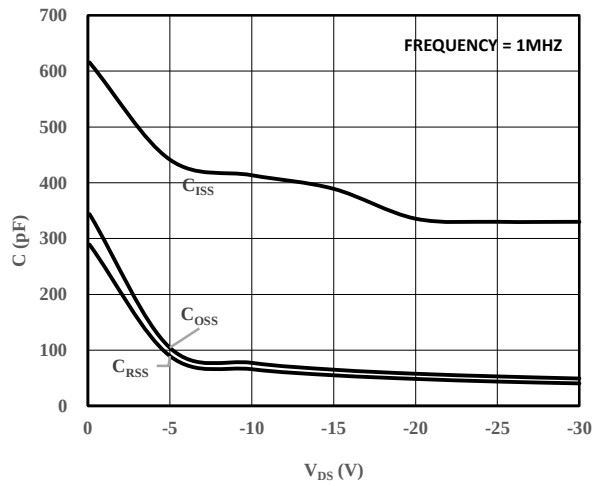


Fig 7 Capacitance Characteristics

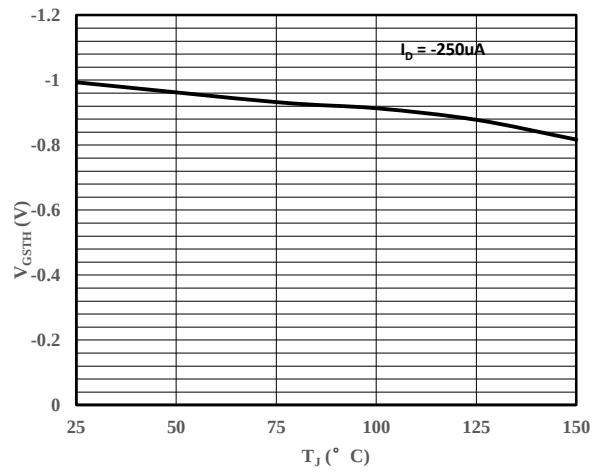


Fig 8 Gate Voltage vs. Junction Temperature

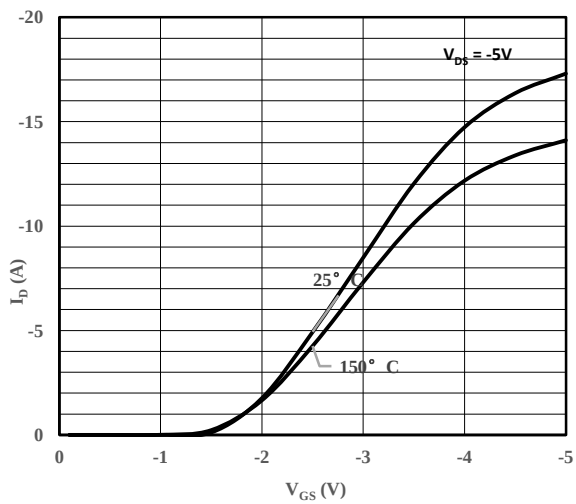


Fig 9 Transfer Characteristics

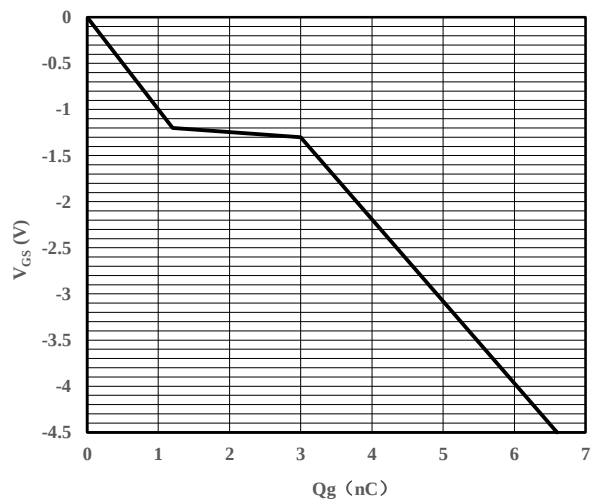
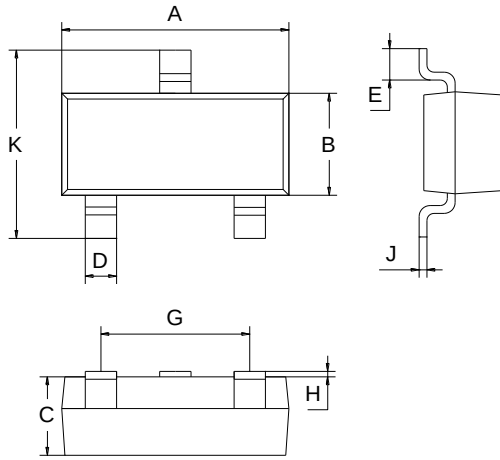


Fig 10 Gate-Charge Characteristics

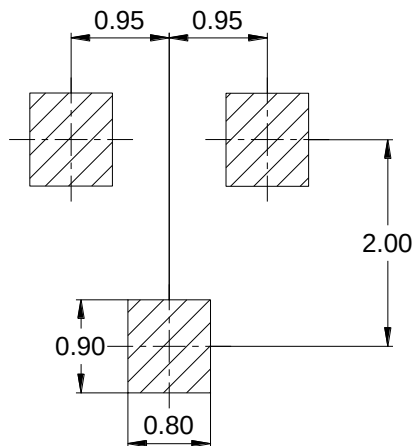
Package Outline Dimensions (Unit: mm)



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



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