

Features

- Low on-resistance
- ESD protected gate up to 2kV HBM
- High-speed switching
- Drive circuits can be simple
- Parallel use is easy

Shipping Quantity

- 3000pcs / Tape & Reel

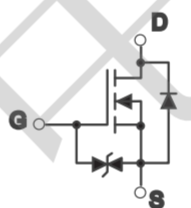
Typical Applications

- N-channel enhancement mode effect transistor
- Switching application

Mechanical Data

- Case: SOT-323
- Molding Compound, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208

Circuit Diagram



N-MOS



SOT-323

Absolute Maximum Ratings (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	60	V
Gate -Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	300	mA
Pulsed Drain Current (t _p = 10μs)	I _{DM}	2000	mA
Single Pulse Avalanche Energy ^{*2}	E _{AS}	0.11	mJ
Power Dissipation	P _D	0.25	W

Thermal Characteristics

Parameter	Symbol	Limits	Unit
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	500	°C/W
Thermal Resistance Junction to Lead	$R_{\theta JL}$	313	
Thermal Resistance Junction to Case	$R_{\theta JC}$	261	
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics (TA=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
OFF Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	60	-	-	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 60V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-body Leakage	V _{GS} = ±20V, V _{DS} = 0V	-	-	±10	μA
ON Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *1	V _{GS} = 5V, I _D = 0.05A	-	1.5	3	Ω
		V _{GS} = 4.5V, I _D = 0.5A	-	1.8	4	
		V _{GS} = 10V, I _D = 0.5A	-	1.45	2.5	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.5	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1.0MHz	-	39	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	47.2	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 20V	-	7.3	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	4.7	-	
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time *3	V _{DD} = 30V, I _D = 0.2A V _{GS} = 10V, R _G = 25Ω R _L = 150Ω	-	6	-	nS
t _r	Turn-on Rise Time *3		-	5	-	
t _{d(off)}	Turn-Off Delay Time *3		-	25	-	
t _f	Turn-Off Fall Time *3		-	15	-	
Q _G	Total Gate-Charge	V _{DS} = 10V	-	0.44	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 4.5V	-	0.14	-	nC
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 0.2A	-	0.2	-	nC
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *1	I _S = 0.3A, V _{GS} = 0V	-	0.85	1.2	V
I _S	Diode Continuous Forward Current	T _C = 25°C	-	-	0.3	A

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

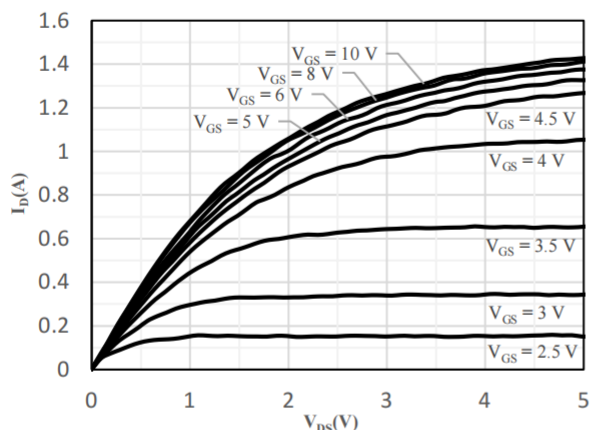


Fig 1 Typical Output Characteristics

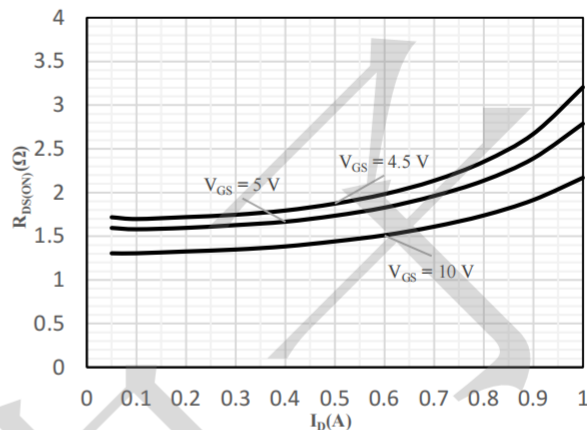


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

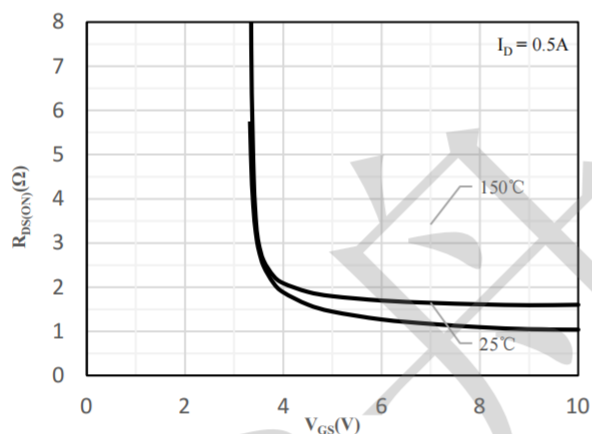


Fig 3 On-Resistance vs. Gate-Source Voltage

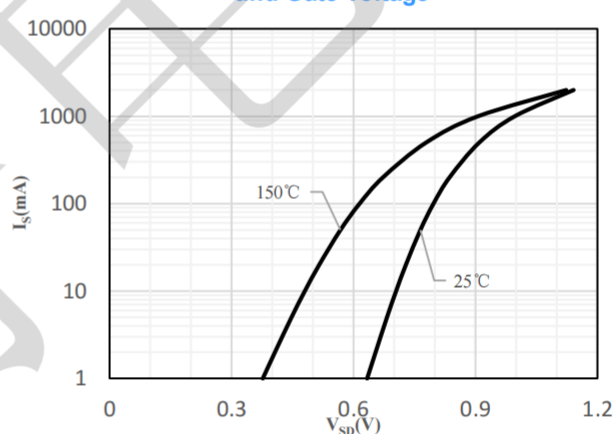


Fig 4 Body-Diode Characteristics

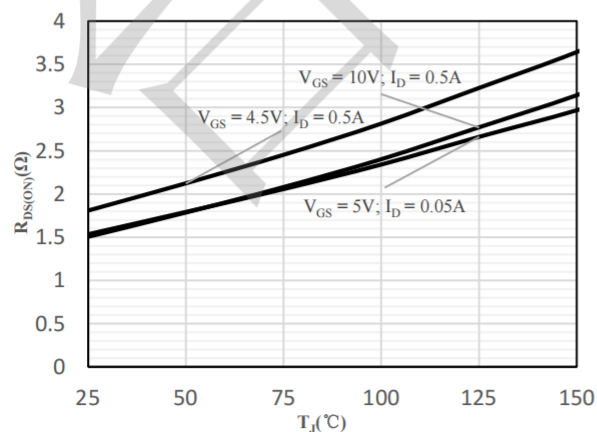


Fig 5 On-Resistance vs. Junction Temperature

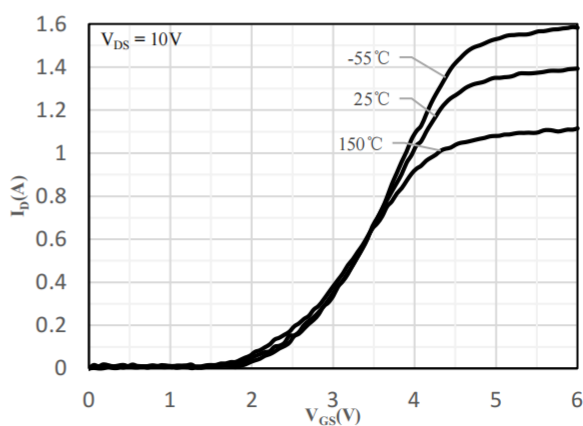


Fig 6 Transfer Characteristics

Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

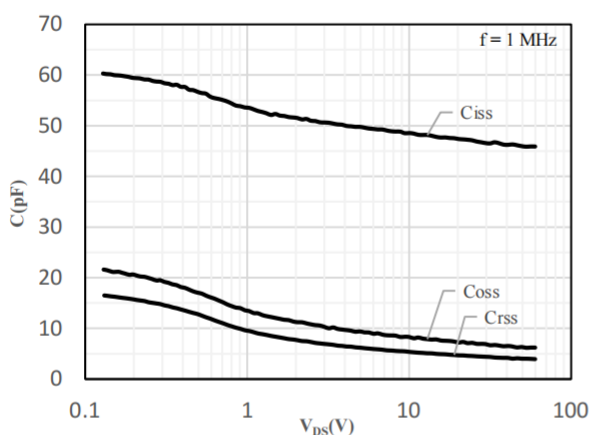


Fig 7 Capacitance Characteristics

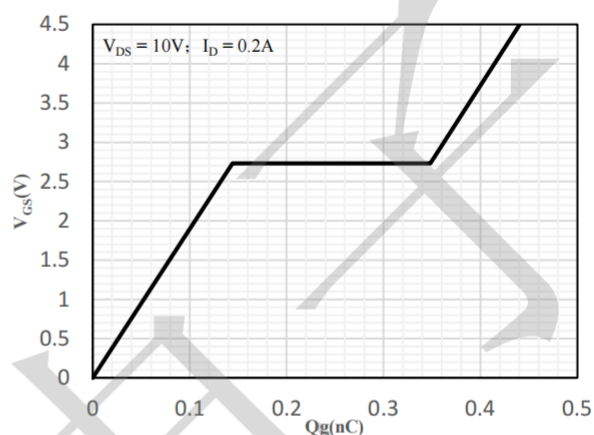


Fig 8 Gate-Charge Characteristics

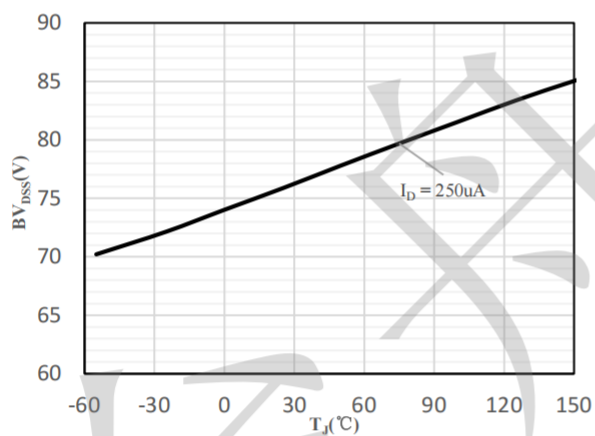


Fig 9 Breakdown Voltage vs. Junction
Temperature

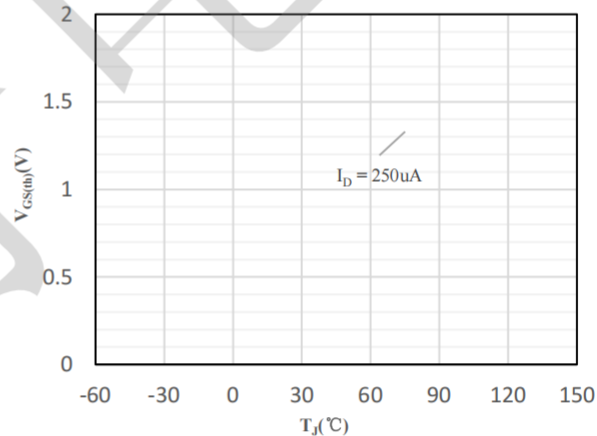
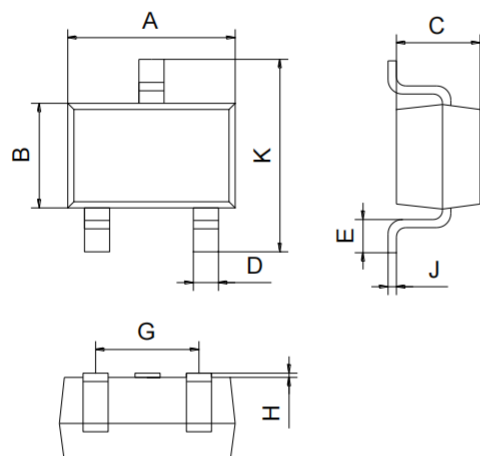


Fig 10 $V_{GS(th)}$ vs. Junction Temperature

Outline Drawing - SOT323 (unit: mm)



SOT-323		
Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout-SOT323 (unit: mm)

