

Features

- Low on-resistance
- N-Channel MOSFET
- Low input capacitance
- Fast switching speed
- ESD Protection

Shipping Quantity

- 3000pcs / Tape & Reel

Typical Applications

- DC-DC converters
- Power management functions
- Battery operated systems and solid-state relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

Mechanical Data

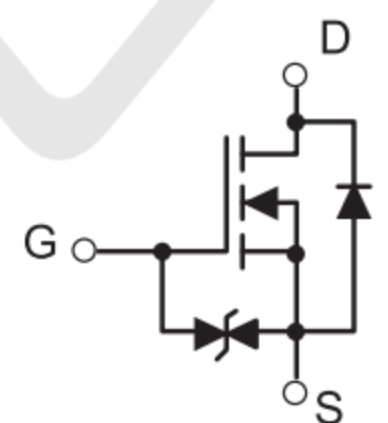
- Case: SOT-23
- Molding Compound, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Circuit Diagram



N-MOS

Marking: J2x

“J2” is Part number, Fixed
“x” is internal code

Absolute Maximum Ratings ($T_{amb}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	50	V
Gate -Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($T_A = 25^{\circ}C$) *1	I_D	360	mA
Pulsed Drain Current ($t_p = 10\mu s$, $T_A = 25^{\circ}C$)	I_{DM}	1500	mA
Single Pulse Avalanche Energy *2	E_{AS}	0.2	mJ
Power Dissipation	P_D	0.35	W

Thermal Characteristics

Parameter	Symbol	Limits	Unit
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	370	°C/W
Thermal Resistance Junction to Lead	$R_{\theta JL}$	222	
Thermal Resistance Junction to Case	$R_{\theta JC}$	187	
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	50	-	-	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 50V, 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} = 10V, I _D = 0.5A	-	1.5	2.0	Ω
		V _{GS} = 4.5V, I _D = 0.2A	-	1.7	2.5	
		V _{GS} = 2.5V, I _D = 0.1A	-	2.0	4.5	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.8	1	1.5	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	48	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	32	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 25V	-	6	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	3	-	
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time *3	V _{DD} = 25V, I _D = 0.36A V _{GS} = 10V, R _G = 6Ω	-	2.2	-	nS
t _r	Turn-on Rise Time *3		-	19.2	-	
t _{d(off)}	Turn-Off Delay Time *3		-	6.2	-	
t _f	Turn-Off Fall Time *3		-	23	-	
Q _G	Total Gate-Charge	V _{DS} = 25V	-	4	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10 V	-	0.5	-	nC
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 0.2A	-	0.4	-	nC
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _S = 0.5A, V _{GS} = 0V	-	0.89	1.4	V
t _{rr}	Reverse Recovery Time	I _F = 1A, V _{GS} = 0V	-	15	-	ns
Q _{rr}	Reverse Recovery Charge	dI _F /dt = 100A/μs	-	8	-	nC

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

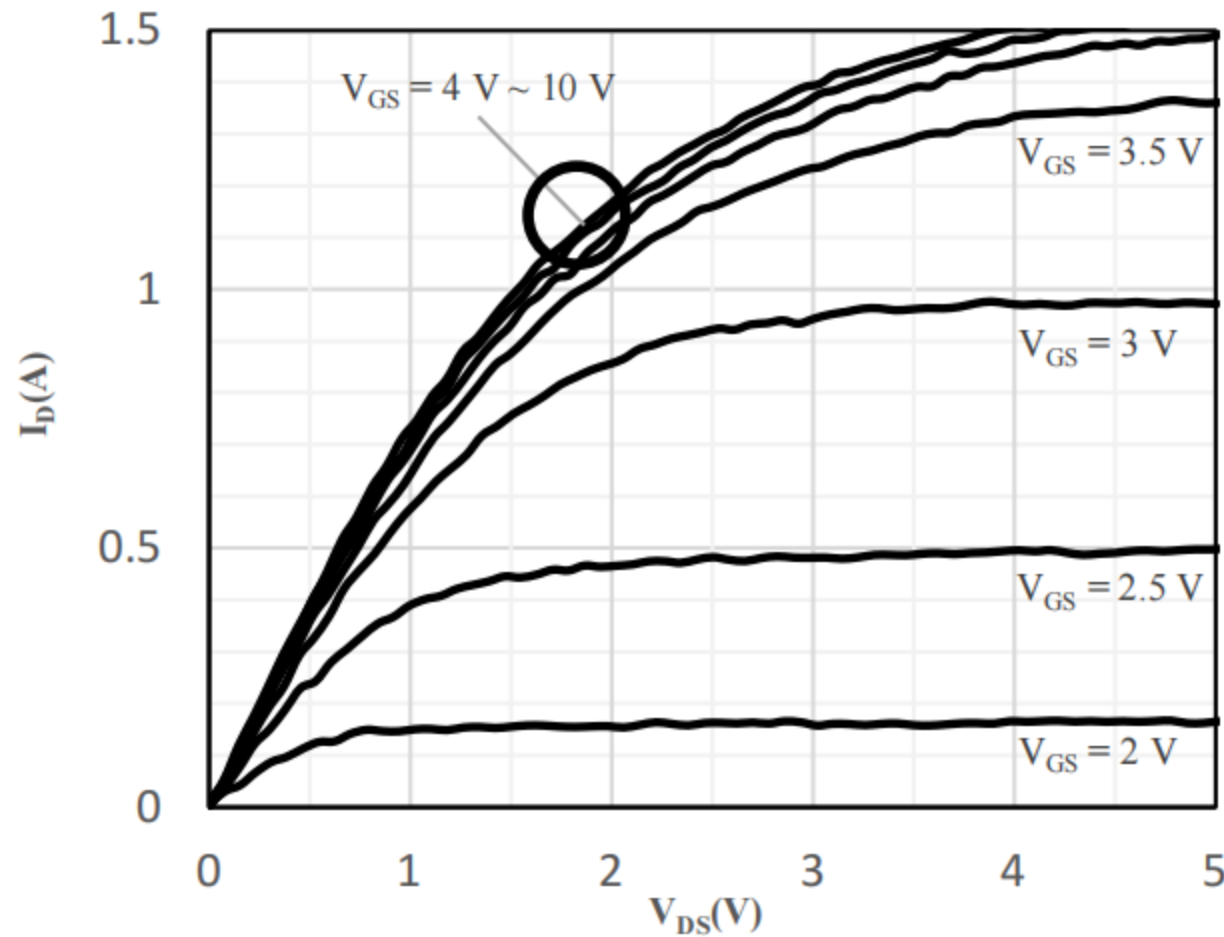


Fig 1 Typical Output Characteristics

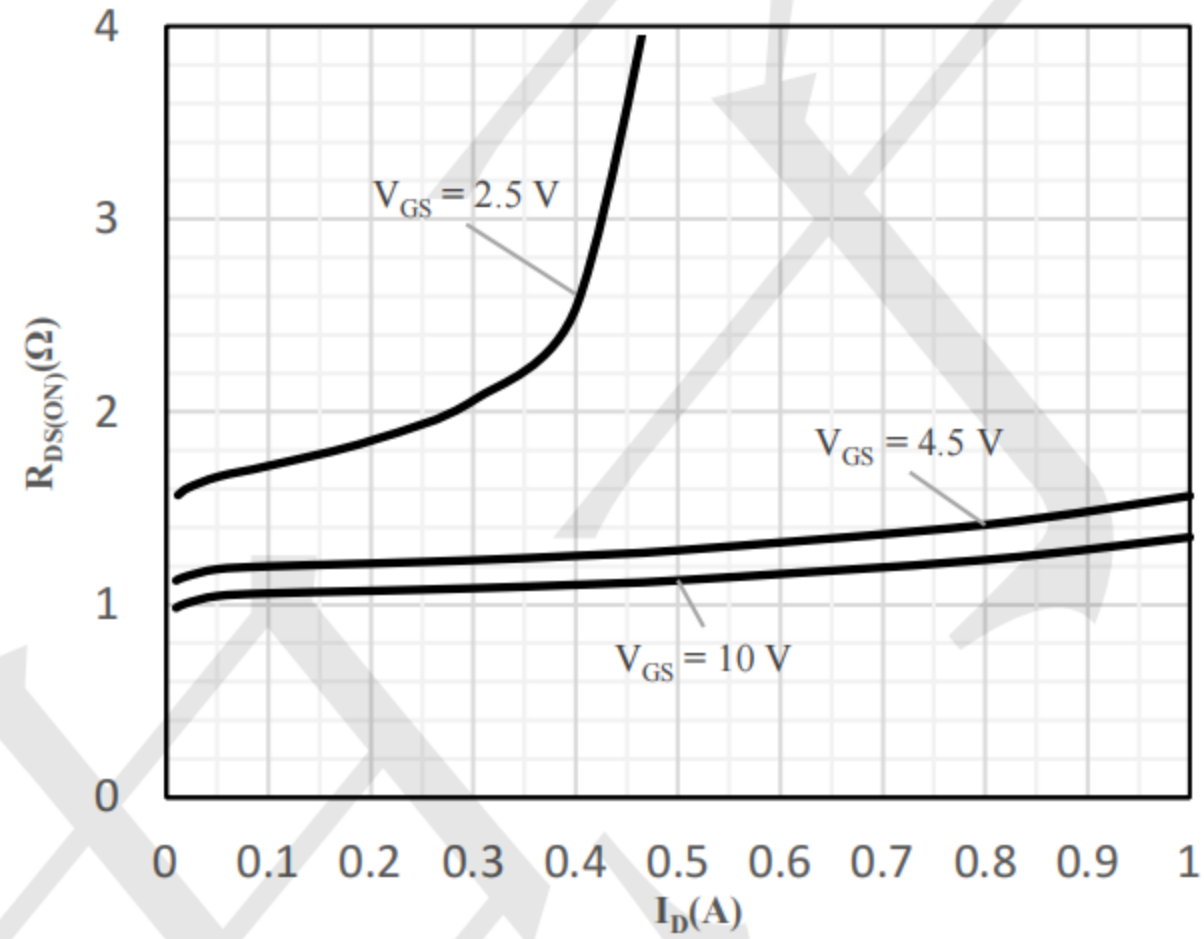


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

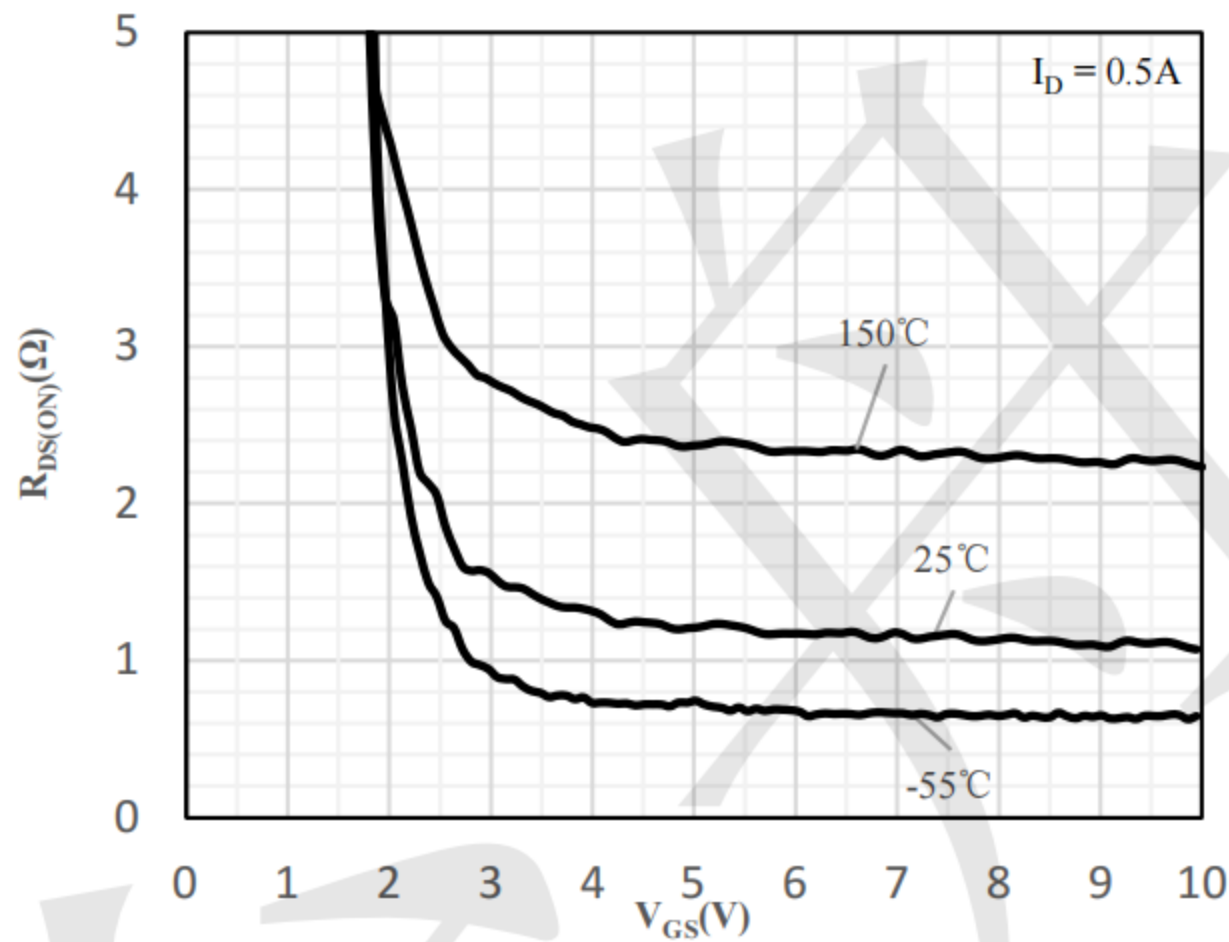


Fig 3 On-Resistance vs. Gate-Source Voltage

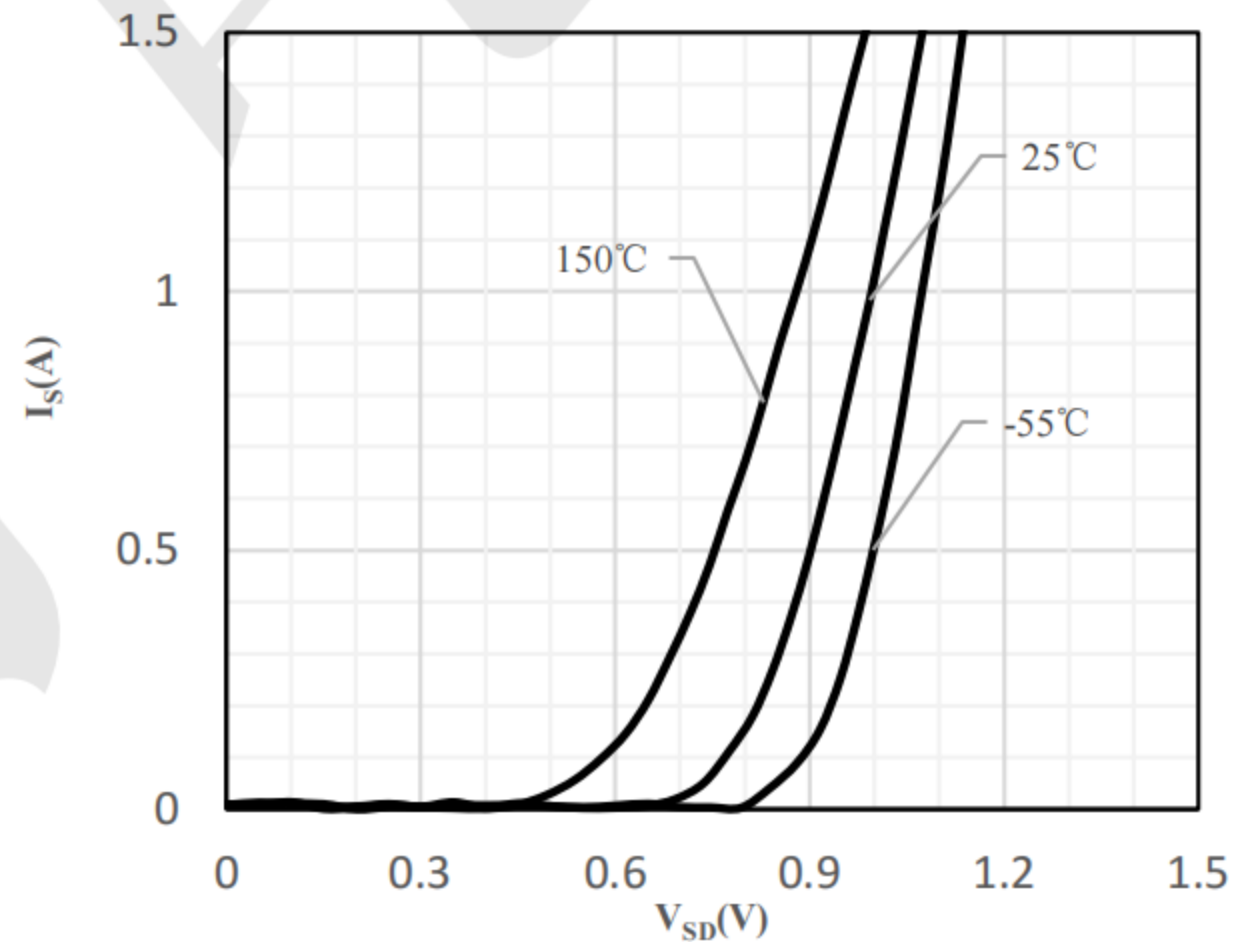


Fig 4 Body-Diode Characteristics

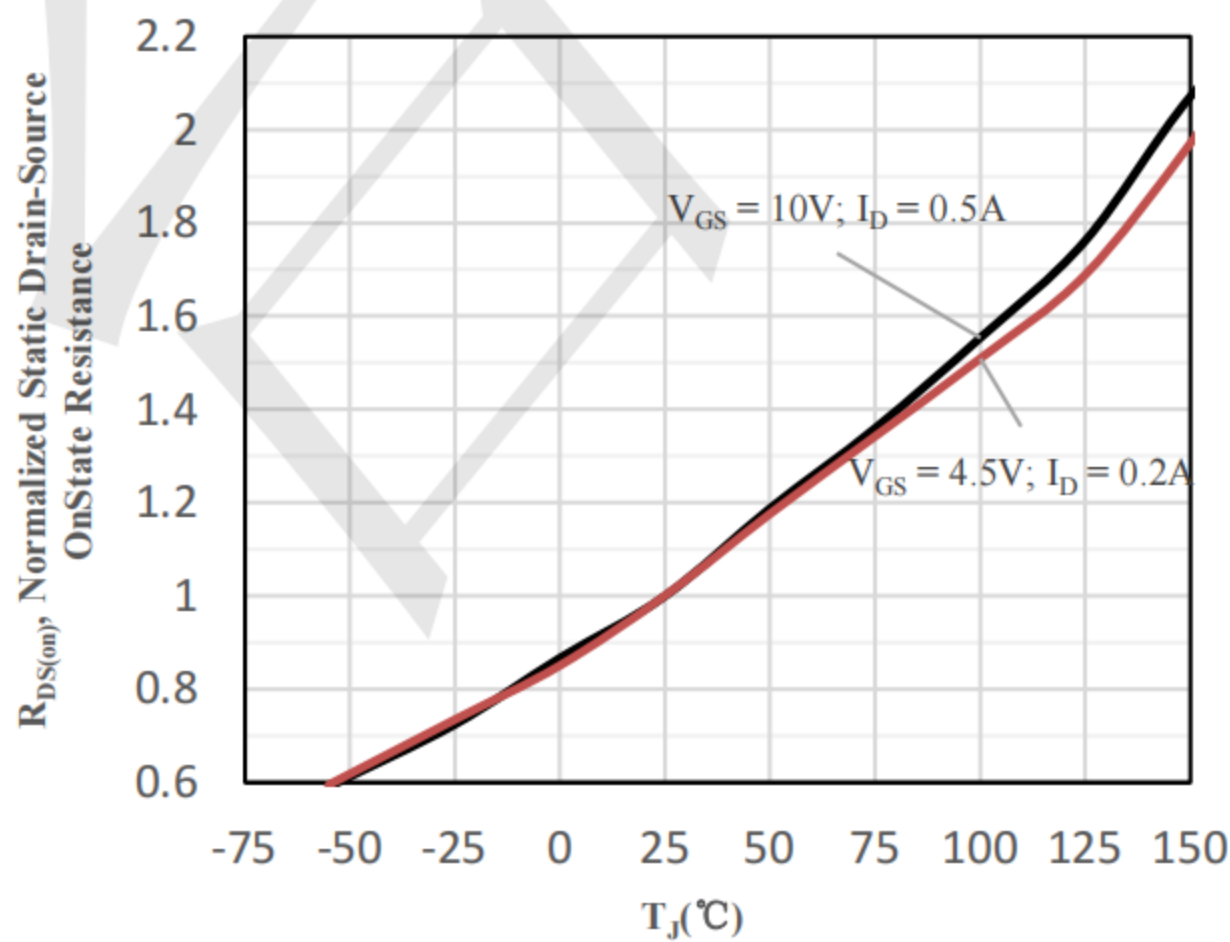


Fig 5 Normalized On-Resistance vs. Junction

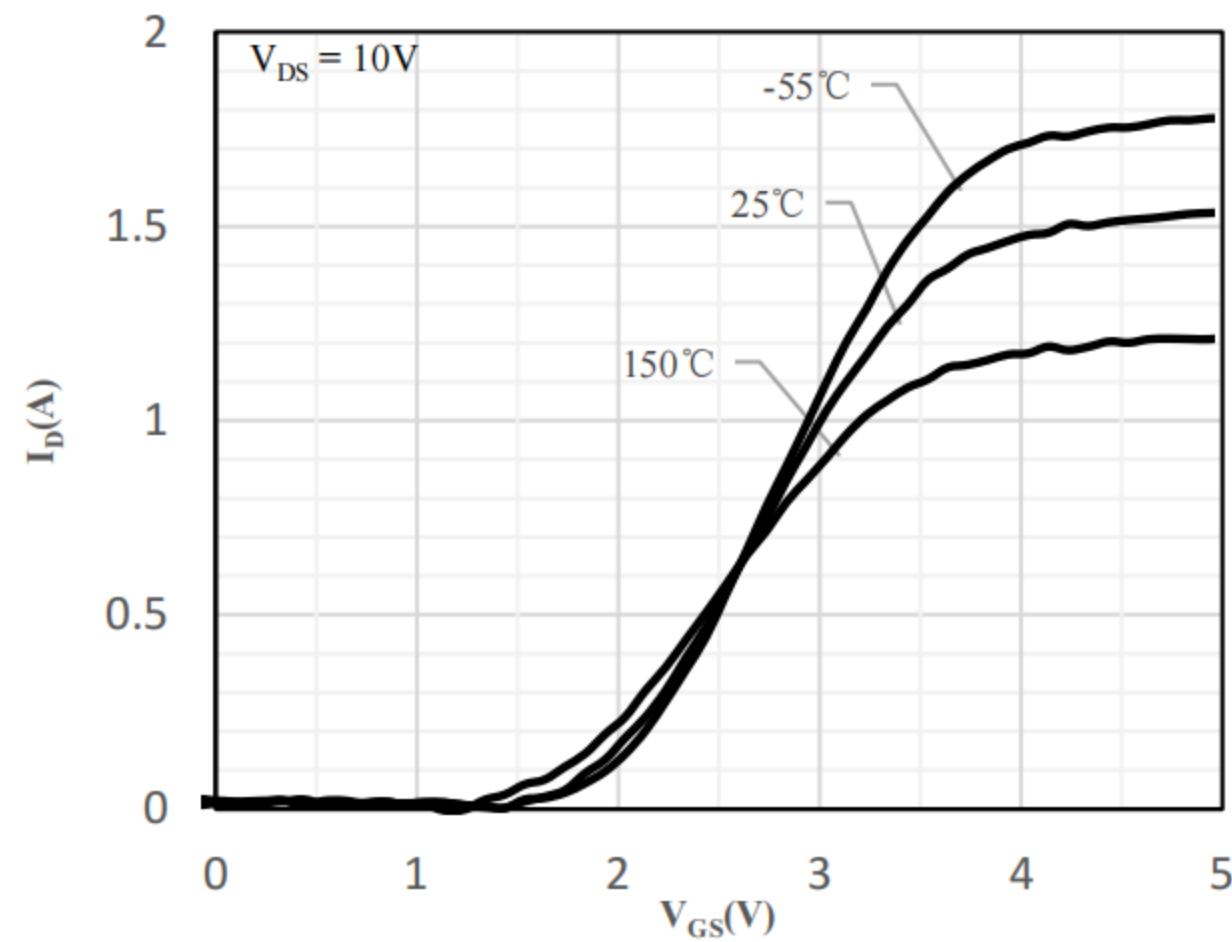


Fig 6 Transfer Characteristics

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

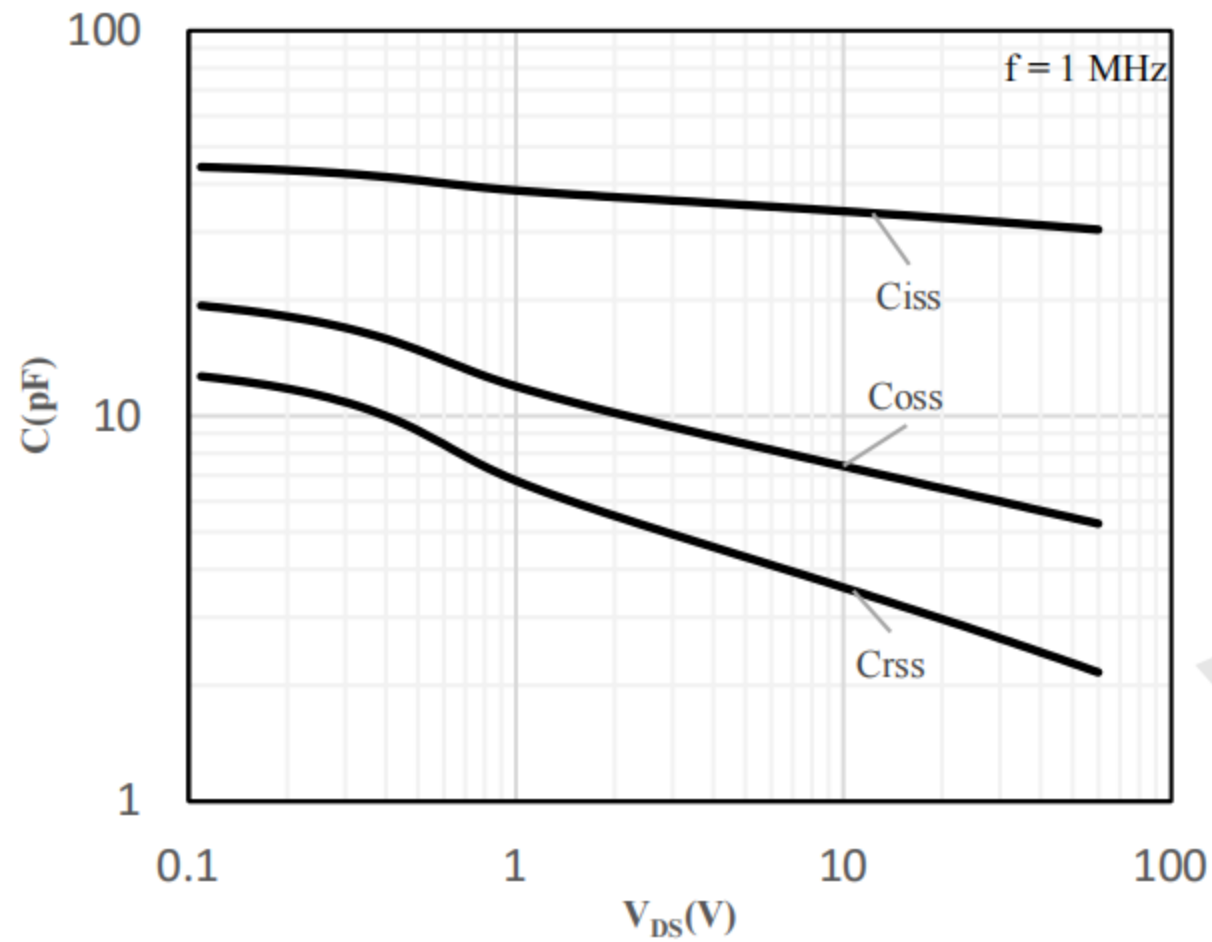


Fig 7 Capacitance Characteristics

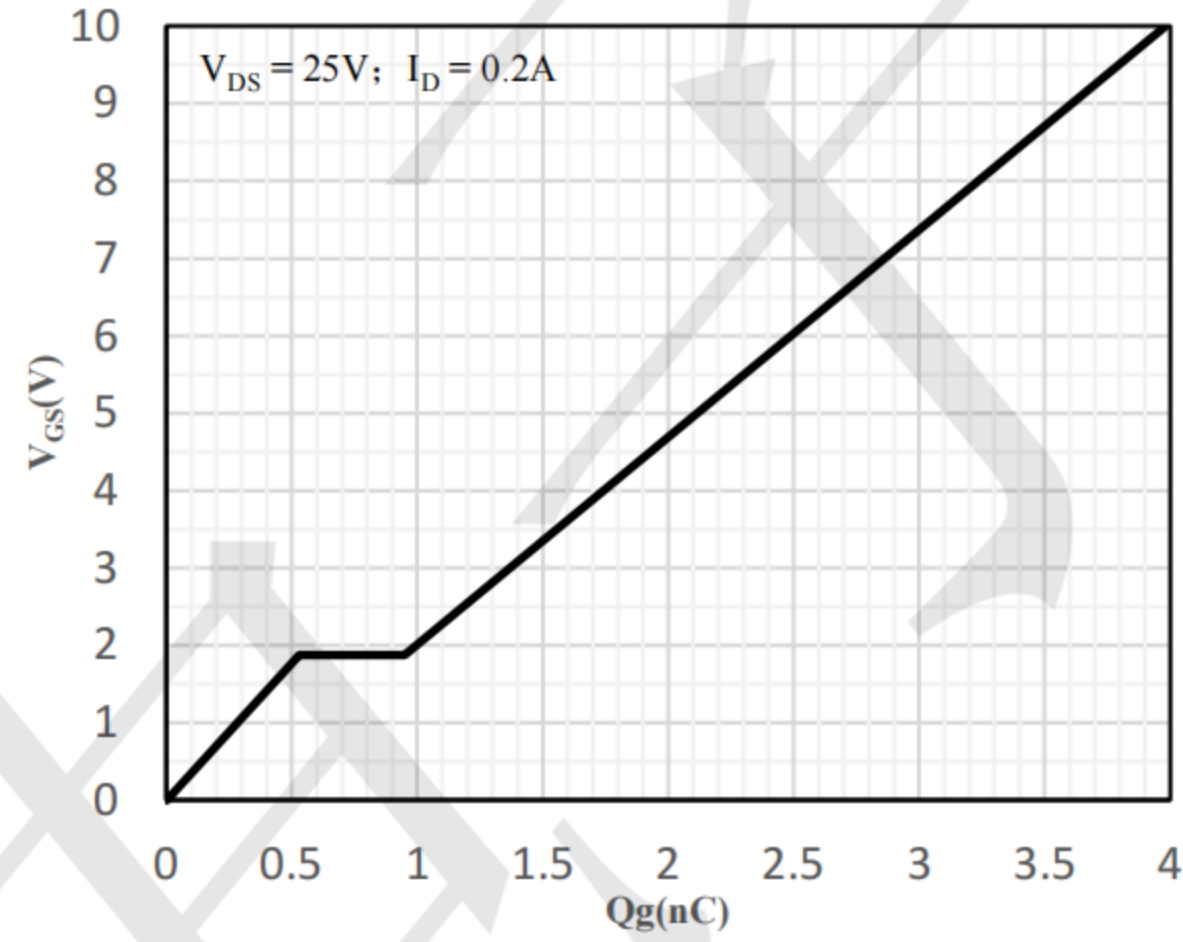
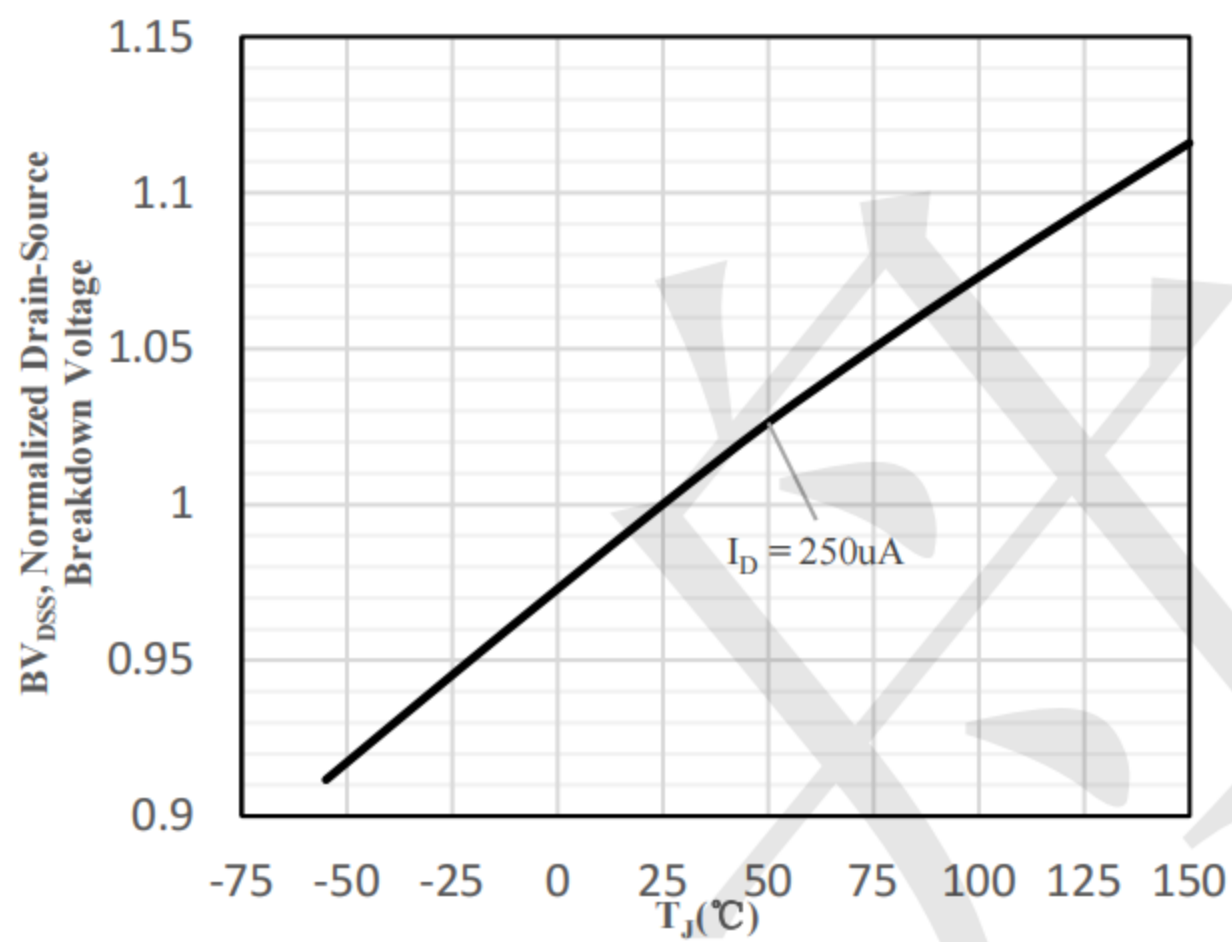


Fig 8 Gate-Charge Characteristics



**Fig 9 Normalized Breakdown Voltage
vs. Junction Temperature**

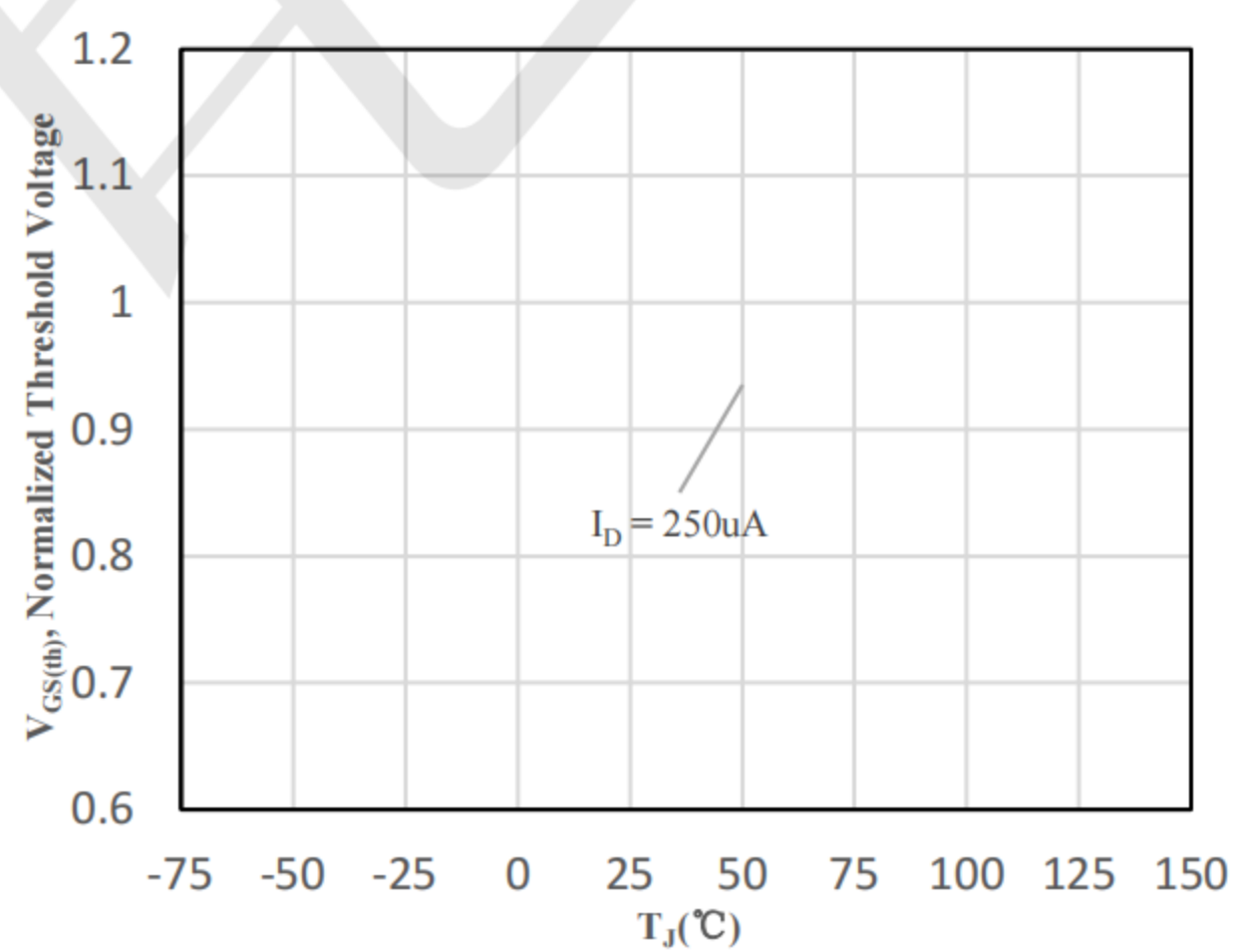


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

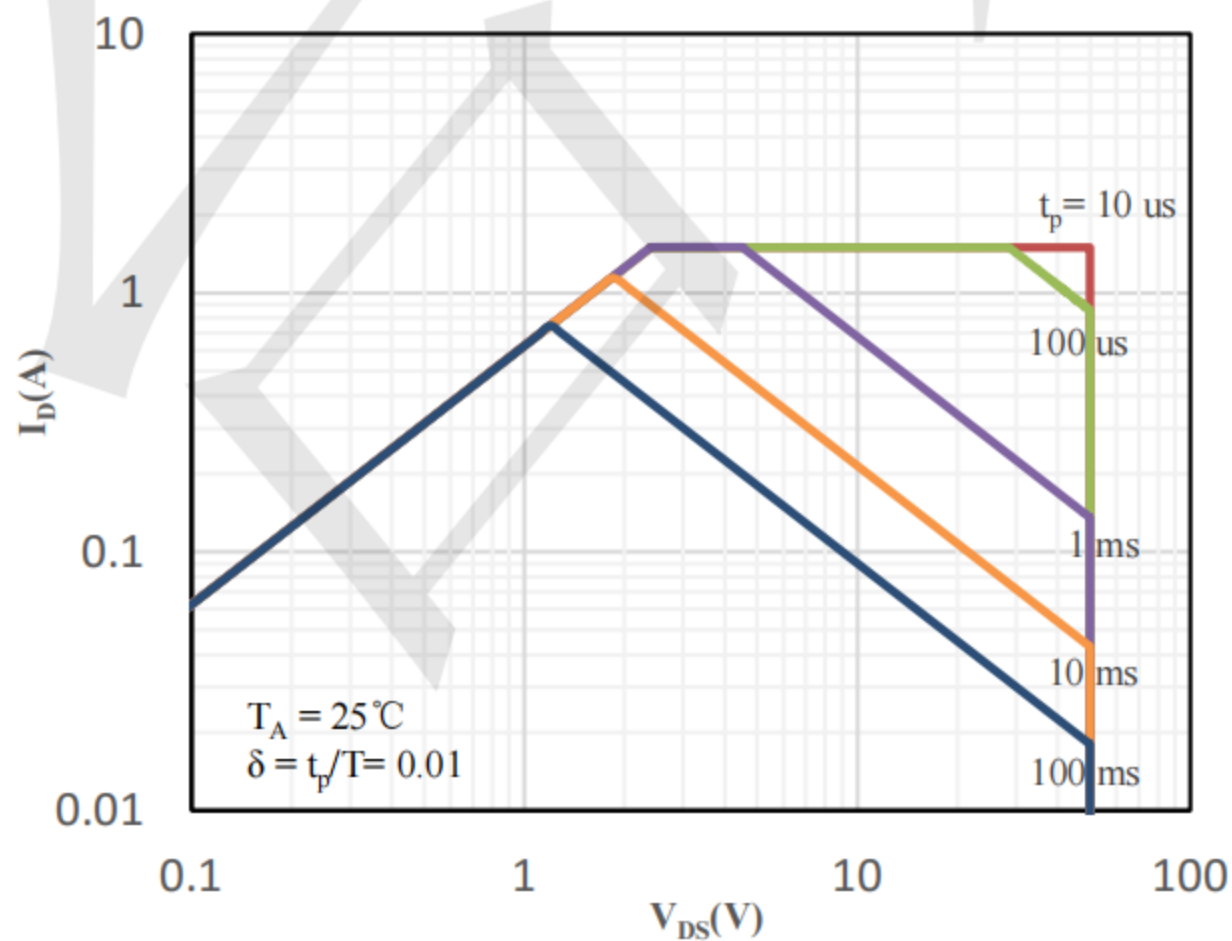
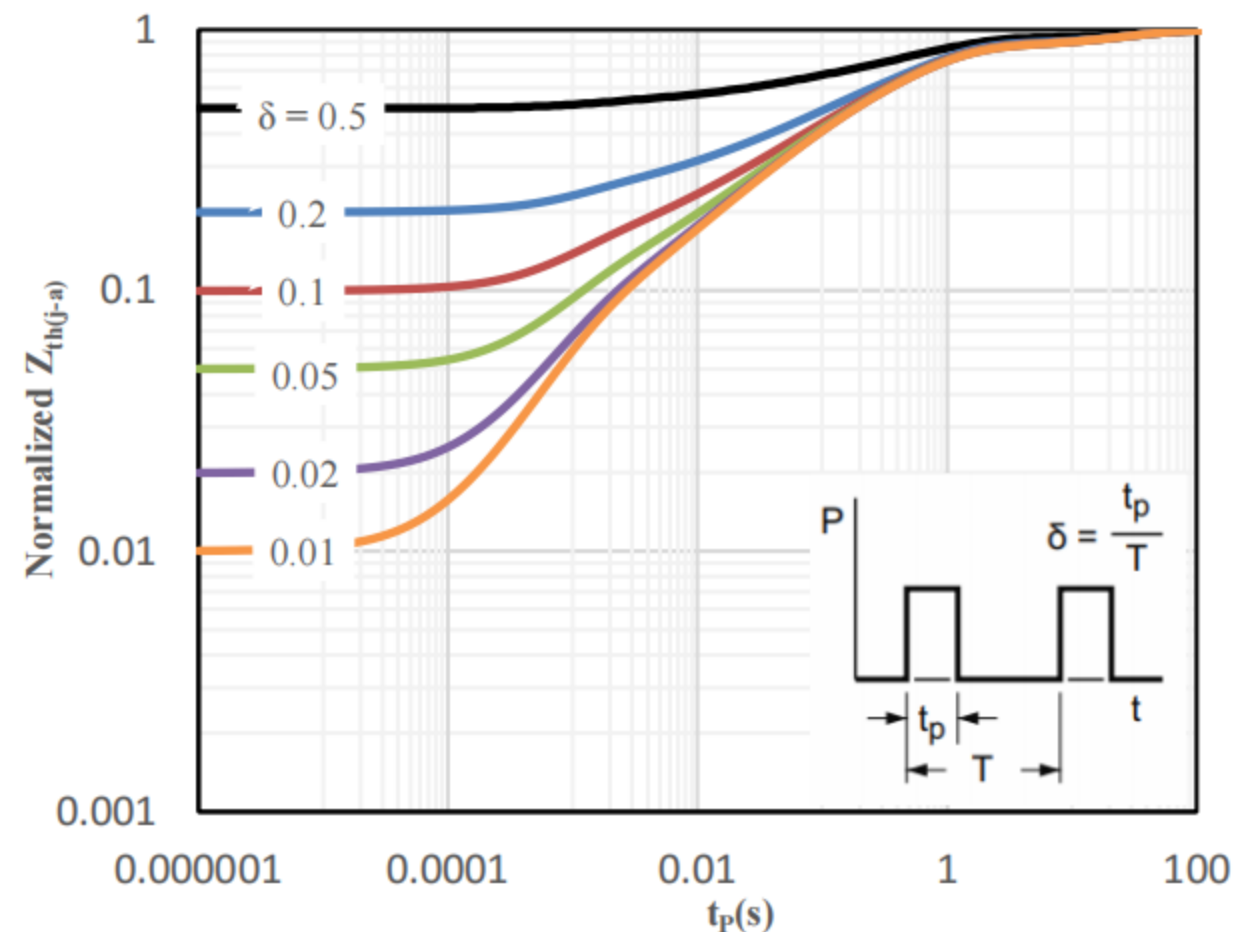
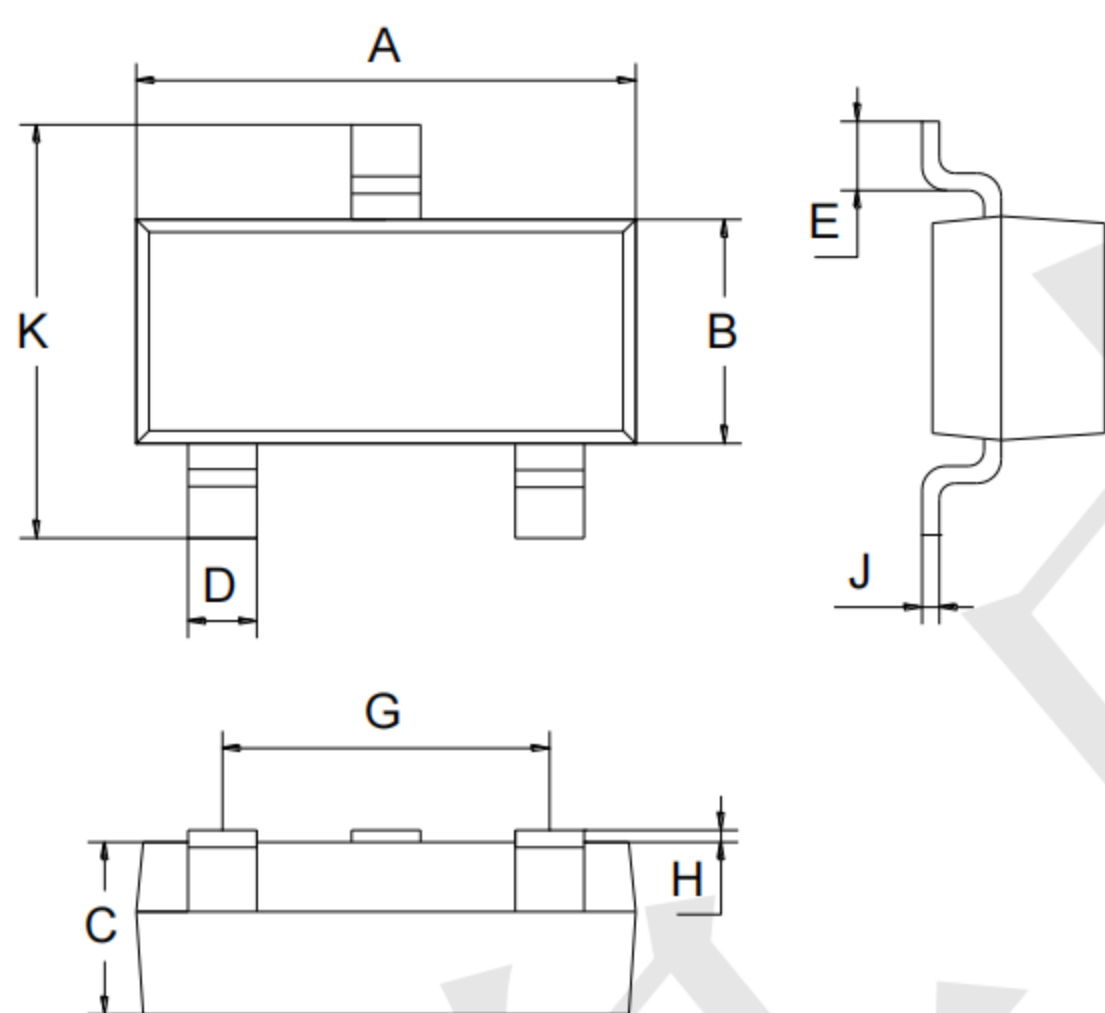


Fig 11 Safe Operation Area



**Fig 12 Normalized Maximum transient thermal
impedance**

Outline Drawing - SOT23



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

Land Pattern - SOT23

