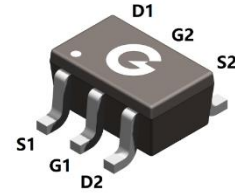
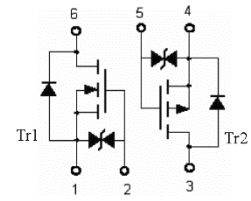


Features

- Low on-resistance
- ESD protected
- High speed switching
- Low leakage current
- JESD22-A114-B ESD rating of class 2 per human body model

HF



SOT-363

Mechanical Data

- Case: SOT-363
- 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
2N7172DW	SOT-363	3000 pcs / Tape & Reel	7172

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

Parameter	Symbol	Q1	Q2	Unit
Drain-to-Source Voltage	V _{DSS}	60	-60	V
Gate-to-Source Voltage	V _{GSS}	±20	±20	V
Continuous Drain Current (T _A = 25°C) ^{*2}	I _D	0.3	-0.2	A
Continuous Drain Current (T _A = 70°C) ^{*2}		0.24	-0.16	A
Pulsed Drain Current (t _p = 10μs, T _A = 25°C)	I _{DM}	1.2	-0.8	A
Single Pulse Avalanche Energy ^{*5}	E _{AS}	0.2	0.3	mJ
Power Dissipation (T _A = 25°C) ^{*1}	P _D	0.2		W
Power Dissipation (T _A = 25°C) ^{*2}		0.3		W
Operating Junction Temperature Range	T _J	-55 ~ +150		°C
Storage Temperature Range	T _{STG}	-55 ~ +150		°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Air ^{*1}	R _{θJA}	-	-	625	°C/W
Thermal Resistance Junction-to-Air ^{*2}		-	-	420	°C/W

Electrical Characteristics-Q₁ (@ T_A = 25°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	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±10	μA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance ^{*3}	V _{GS} = 10V, I _D = 0.5A	-	1.4	2.5	Ω
		V _{GS} = 4.5V, I _D = 0.5A	-	1.8	4	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.5	V
Dynamic Characteristics						
g _{fs}	Transconductance	V _{DS} = 10V, I _D = 0.2A	-	0.5	-	S
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	34.5	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 20V	-	11.5	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	1.5	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time ^{*4}	V _{DD} = 30V, V _{GS} = 10V R _L = 150Ω R _G = 25Ω I _D = 0.2A	-	6	-	nS
t _r	Turn-on Rise Time ^{*4}		-	5	-	
t _{d(OFF)}	Turn-Off Delay Time ^{*4}		-	25	-	
t _f	Turn-Off Fall Time ^{*4}		-	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 ^{*3}	I _{SD} = 0.3A, V _{GS} = 0V	-	0.86	1.2	V

Electrical Characteristics-Q₂ (@ T_A = 25°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	-	-	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±10	μA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance ^{*3}	V _{GS} = -10V, I _D = -0.1A	-	1.8	4	Ω
		V _{GS} = -4.5V, I _D = -0.1A	-	2.3	5	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-2	V
Dynamic Characteristics						
g _{fs}	Transconductance	V _{DS} = -10V, I _D = -0.2A	-	0.5	-	S
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = -20V f = 1.0MHz	-	39	-	pF
C _{OSS}	Output Capacitance		-	12	-	
C _{RSS}	Reverse Transfer Capacitance		-	2	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time ^{*4}	V _{DS} = -15V R _L = -50Ω I _D = -2.5A	-	2.5	-	ns
t _r	Turn-on Rise Time ^{*4}		-	1	-	
t _{d(OFF)}	Turn-Off Delay Time ^{*4}		-	16	-	
t _f	Turn-Off Fall Time ^{*4}		-	8	-	
Q _G	Total Gate-Charge	V _{DS} = -25V V _{GS} = -4.5V I _D = -0.2A	-	2	-	nC
Q _{GS}	Gate to Source Charge		-	0.7	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	0.5	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*3}	I _S = -0.2A, V _{GS} = 0 V	-	-0.87	-1.4	V

Notes:

1. The data tested by surface mounted on a minimum recommended pad
2. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
3. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
4. Guaranteed by design, not subject to production
5. The E_{AS} data shows Max. rating. N: The test condition is V_{DD} = 30V, V_{GS} = 10V, L = 0.1mH;
P: The test condition is V_{DD} = -30V, V_{GS} = -10V, L = 0.1mH

Ratings and Characteristics Curves-Q₁ (@ T_A = 25°C unless otherwise specified)

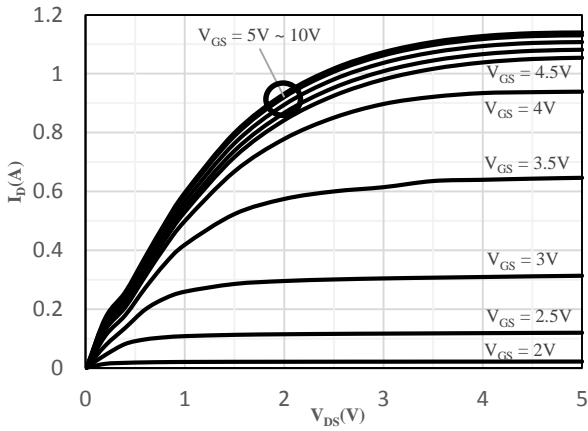


Fig 1 Typical Output Characteristics

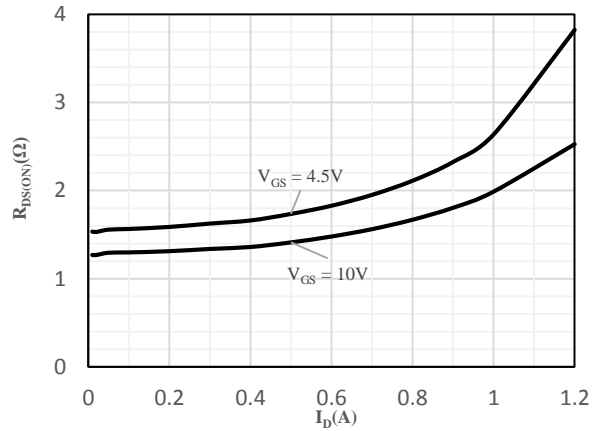


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

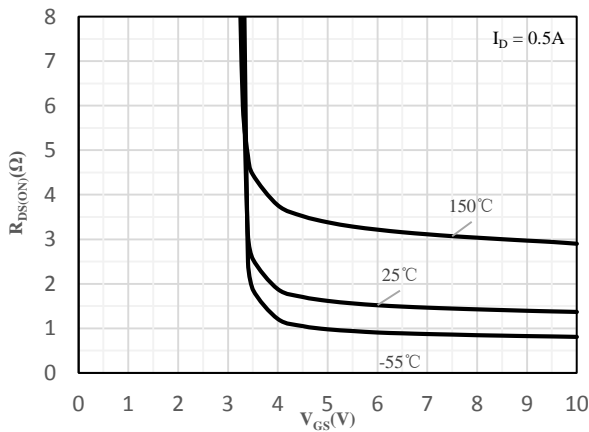


Fig 3 On-Resistance vs. Gate-Source Voltage

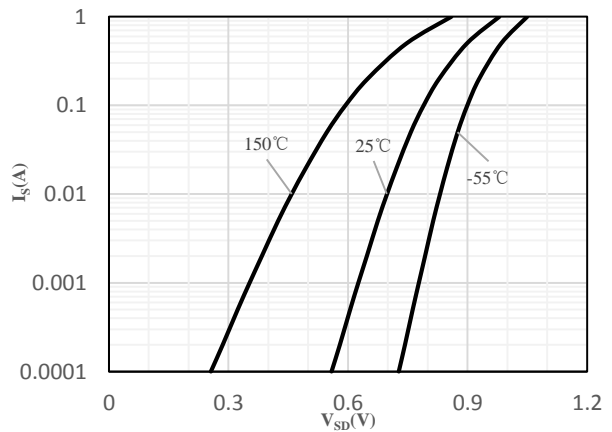


Fig 4 Body-Diode Characteristics

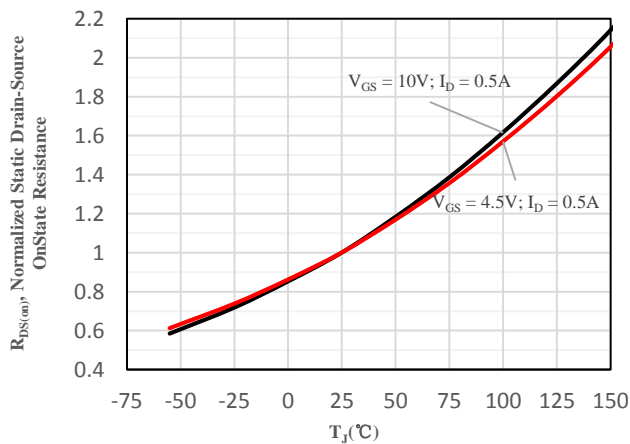


Fig 5 Normalized On-Resistance vs. Junction Temperature

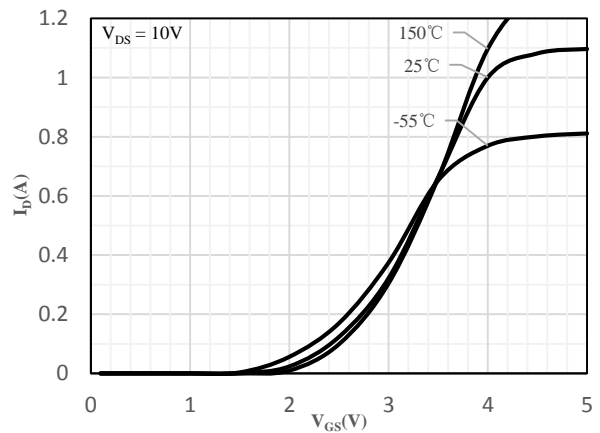


Fig 6 Transfer Characteristics

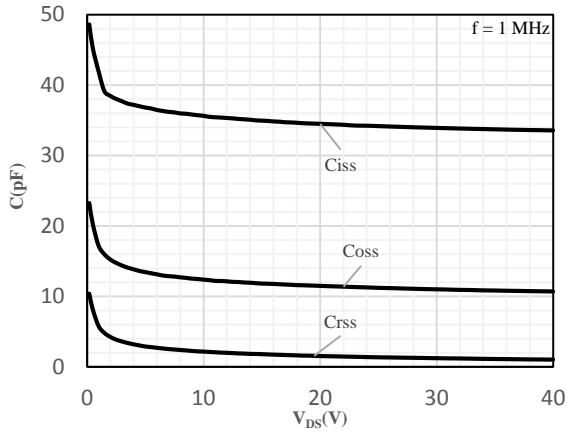


Fig 7 Capacitance Characteristics

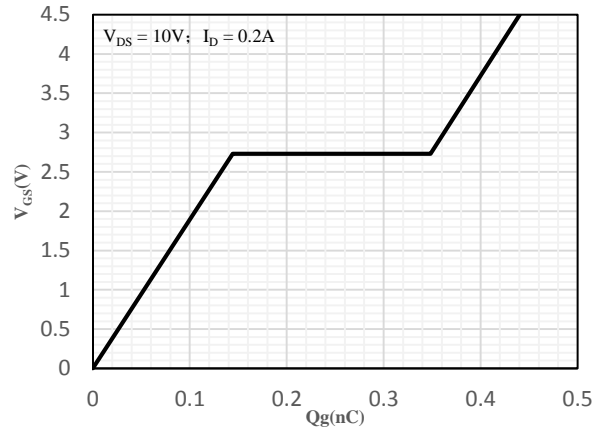


Fig 8 Gate-Charge Characteristics

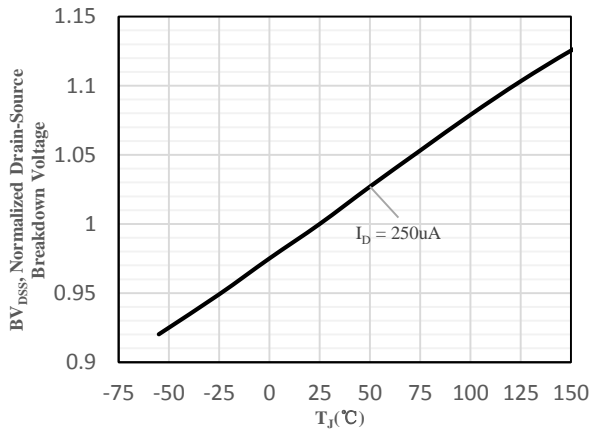


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

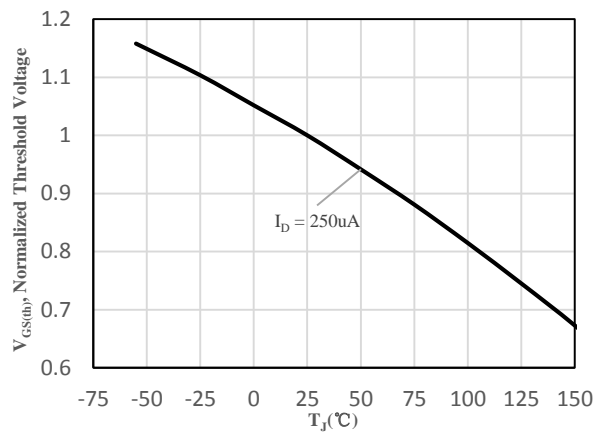


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

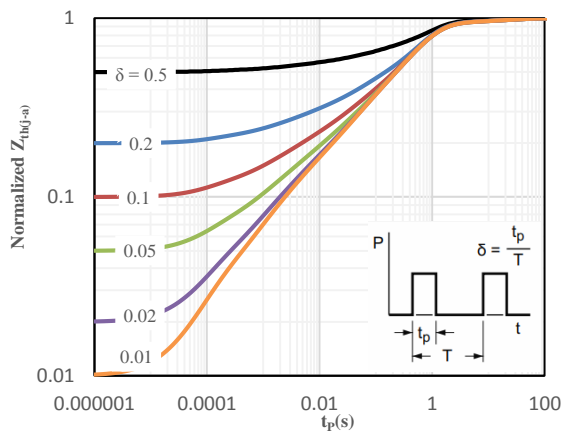


Fig 11 Normalized Maximum transient thermal impedance

Ratings and Characteristics Curves-Q₂ (@ T_A = 25°C unless otherwise specified)

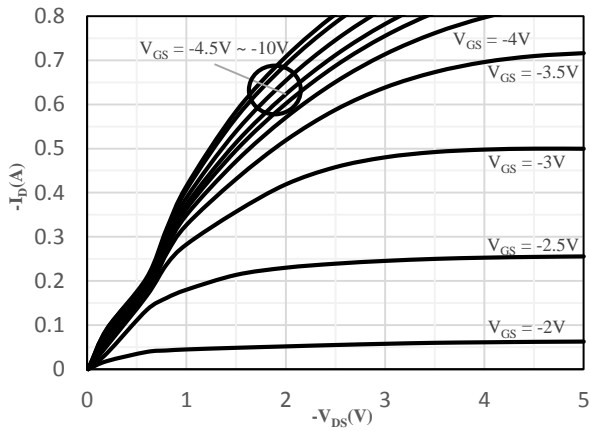


Fig 1 Typical Output Characteristics

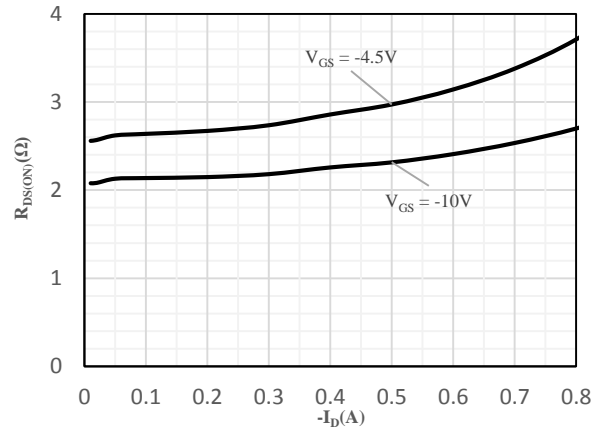


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

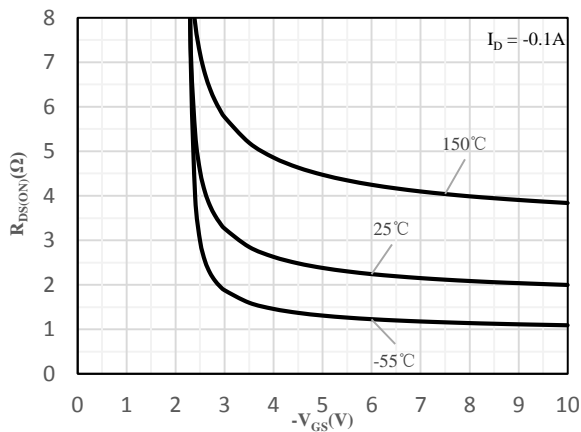


Fig 3 On-Resistance vs. Gate-Source Voltage

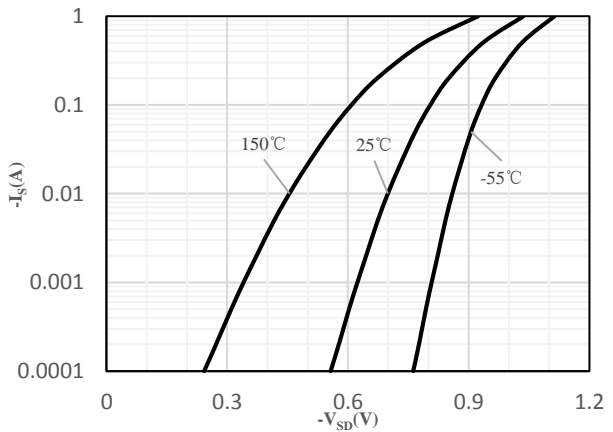


Fig 4 Body-Diode Characteristics

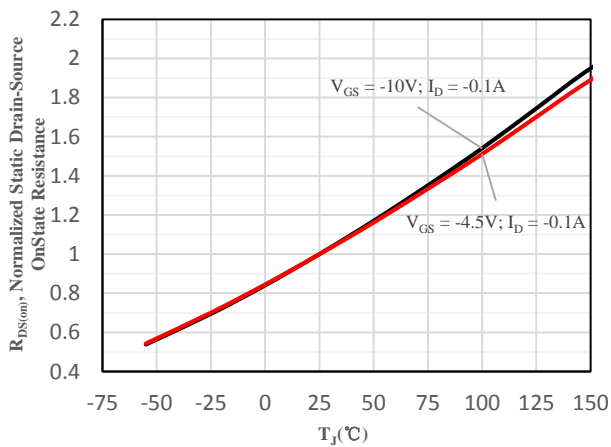


Fig 5 Normalized On-Resistance vs. Junction Temperature

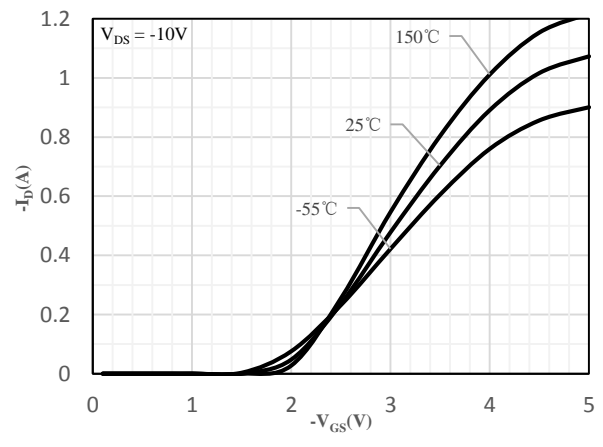


Fig 6 Transfer Characteristics

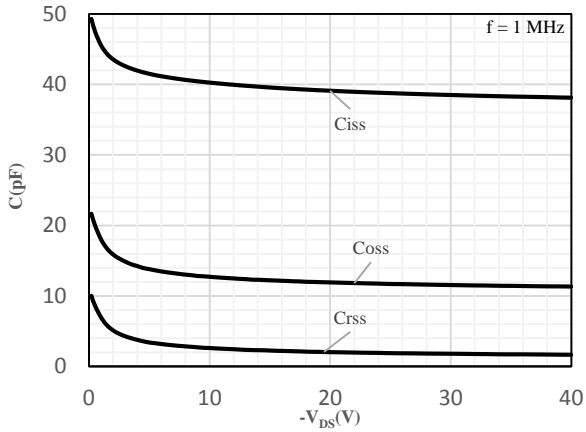


Fig 7 Capacitance Characteristics

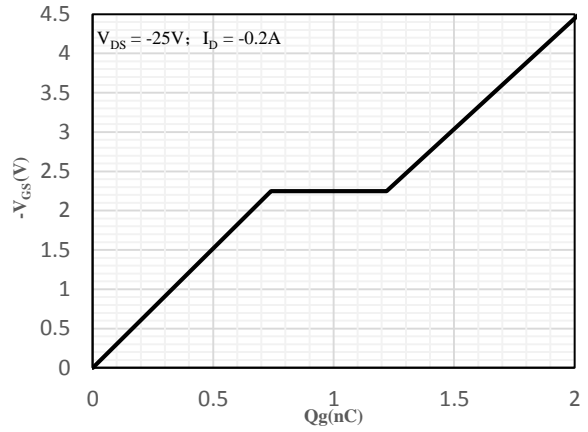


Fig 8 Gate-Charge Characteristics

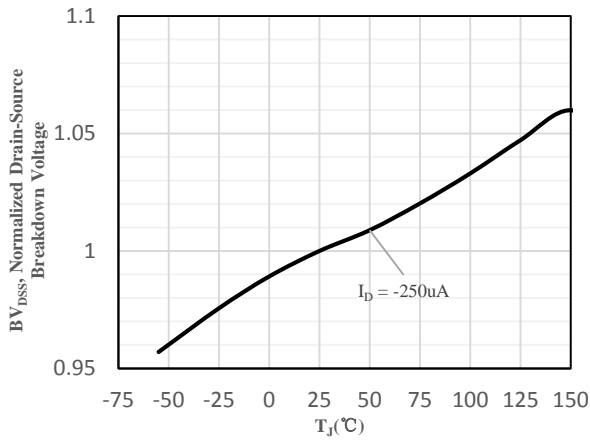


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

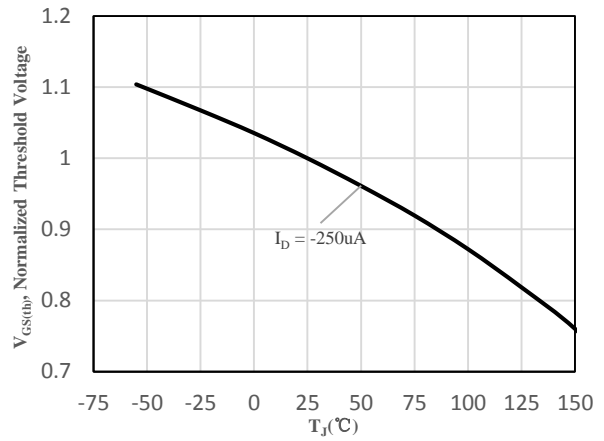


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

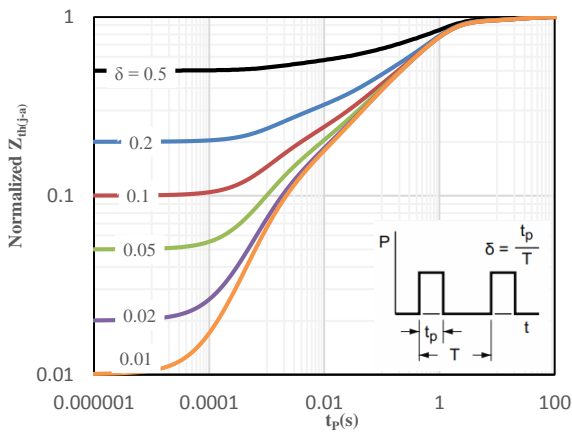
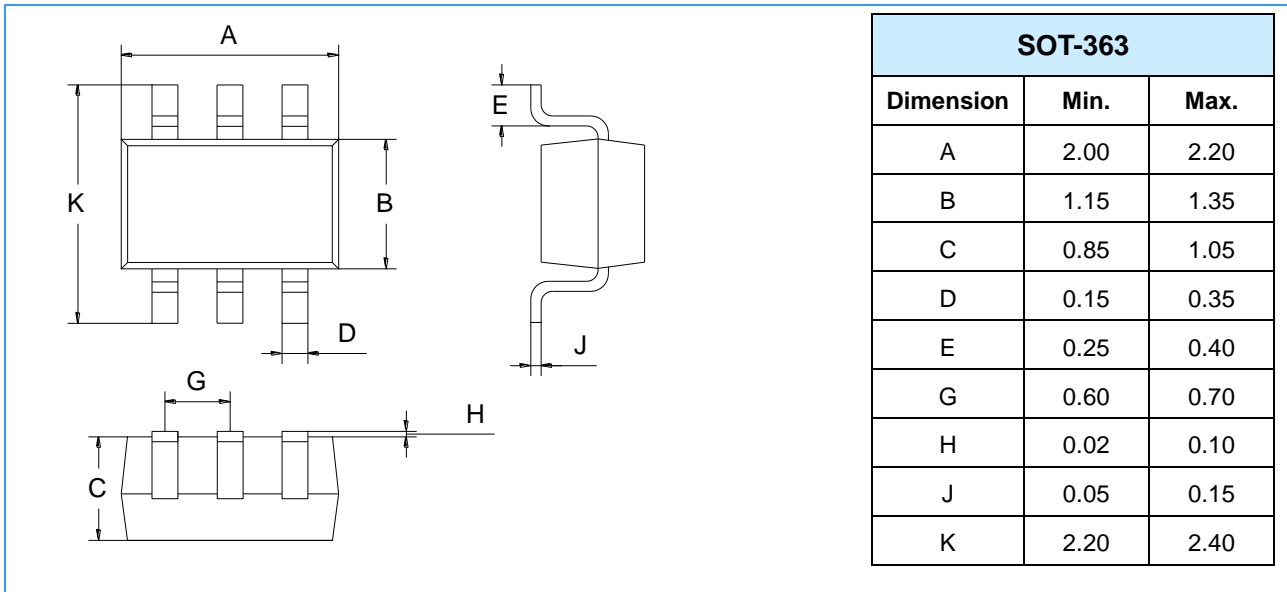
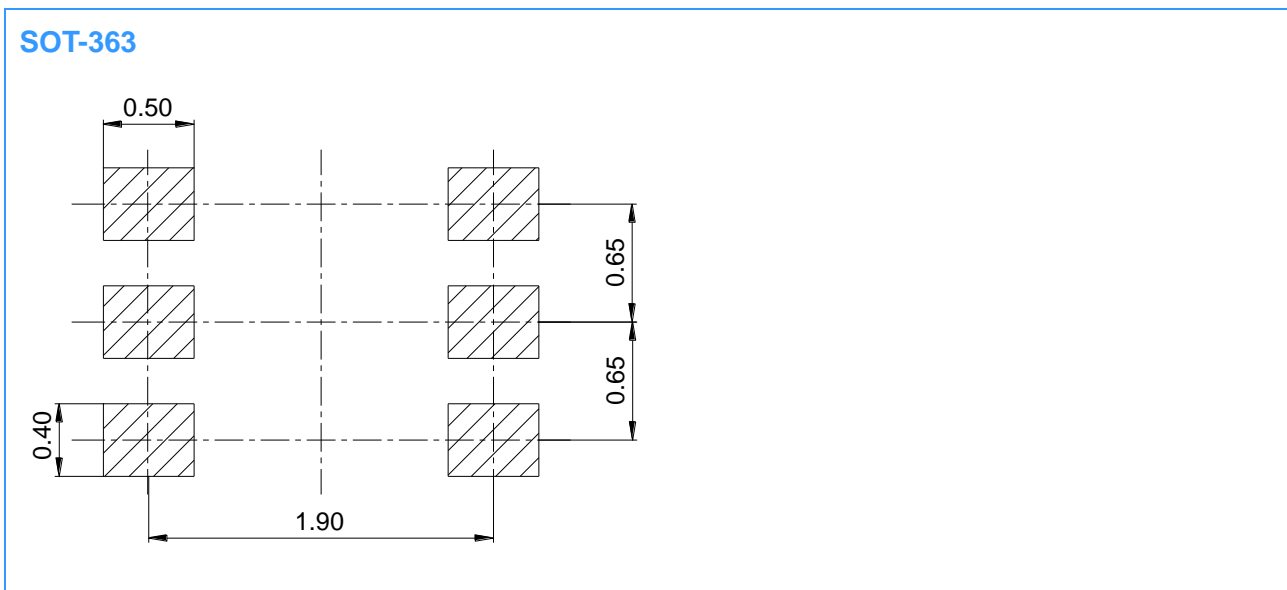


Fig 11 Normalized Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



IMPORTANT NOTICE

Changzhou Galaxy Century Microelectronics (GME) reserves the right to make changes without further notice to any product information (copyrighted) herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.