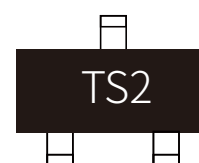


FEATURES

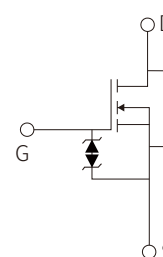
- | High Density Cell Design For Low $R_{DS(On)}$
- | Voltage Controlled Small Signal Switch
- | Rugged and Reliable
- | High Saturation Current Capability
- | Lead free product is acquired



SOT-723



Marking



Schematic Symbol

APPLICATION

- | Direct logic-level interface: TTL/CMOS
- | Drivers: relays, solenoids, lamps
- | hammers, display, memories, etc.
- | Battery operated systems
- | Solid-state relays

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current	I_D	$T_A=25^{\circ}\text{C}$ 0.5	A
		$T_A=100^{\circ}\text{C}$ 0.3	A
Pulsed Drain Current ^(Note 2)	I_{DM}	2	A
Total Power Dissipation ^(Note 3)	P_D	266	mW
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-50- +150	$^{\circ}\text{C}$
Thermal Resistance from Junction to Ambient ^(Note 1)	$R_{\theta JA}$	470	$^{\circ}\text{C/W}$

Note:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_D is based on max. junction temperature, using junction-ambient thermal resistance

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =10μA	30			V
Gate-source leakage ^a	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±10	μA
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-source threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	1.0	1.5	V
Drain-source on-state resistance	R _{DS(on)}	V _{GS} =10V, I _{DS} =0.5A		350	600	mΩ
		V _{GS} =4.5V, I _{DS} =0.4A		400	650	mΩ
		V _{GS} =2.5V, I _{DS} =0.3A		700	1000	mΩ
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f=1MHz		13.9		pF
Output capacitance	C _{oss}			6		pF
Reverse transfer capacitance	C _{rss}			1.8		pF
Total gate charge	Q _g	V _{DS} =15V,V _{GS} =10V,I _D =0.5A		0.8		nC
Gate-source charge	Q _{gs}			0.2		nC
Gate-drain charge	Q _{gd}			0.1		nC
Turn-on delay time	t _{d(on)}	V _{DD} =15V, V _{GS} =10V, I _D =0.5A, R _G =6Ω		2.2		ns
Rise Time	t _r			2.9		ns
Turn-Off Delay Time	t _{d(off)}			7		ns
Fall yime	t _f			7.3		ns
Diode Characteristics						
Continuous Body Diode Current	I _S				0.5	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =0.3A		0.8	1.3	V
Reverse Recovery Time	t _{rr}	I _F =0.5A, dI _F /dt=100A/μs		8.6		ns
Reverse Recovery Charge	Q _{rr}			1.6		nC

CHARACTERISTIC CURVES

Fig.1 Typical Output Characteristics

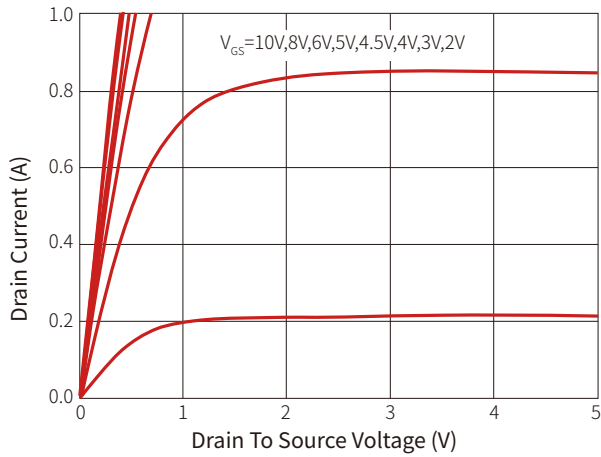


Fig.2 Transfer Characteristics

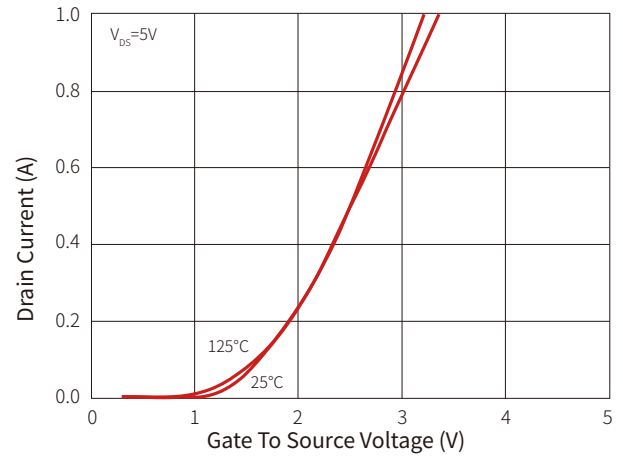


Fig.3 $R_{DS(ON)}$ — V_{GS}

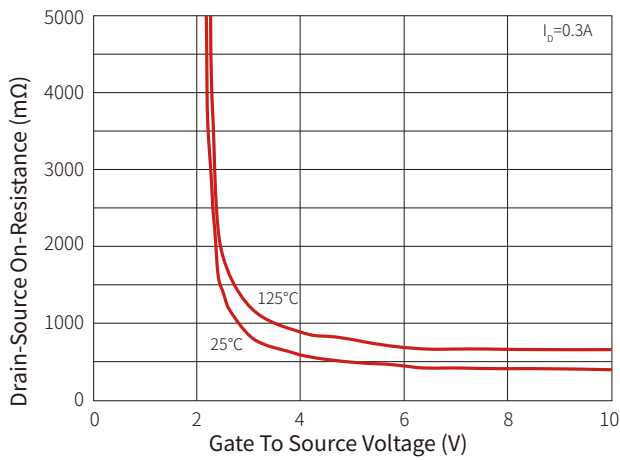


Fig.4 $R_{DS(ON)}$ — I_D

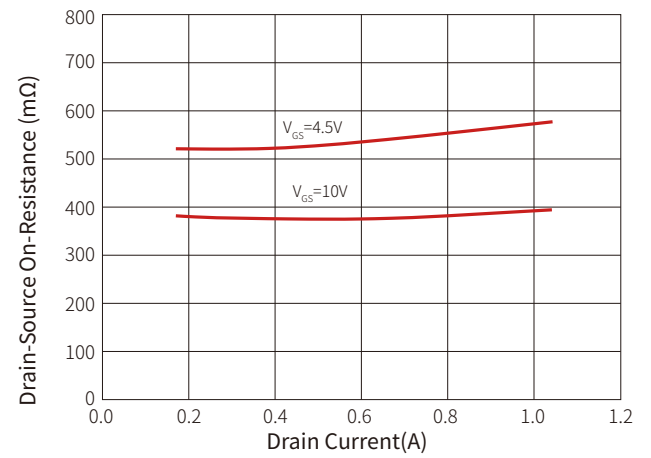


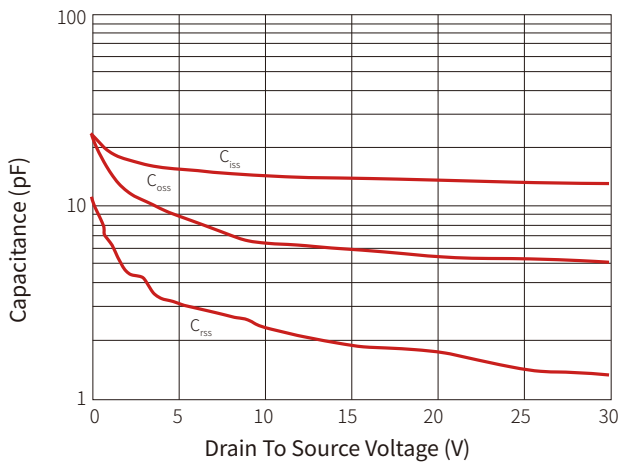
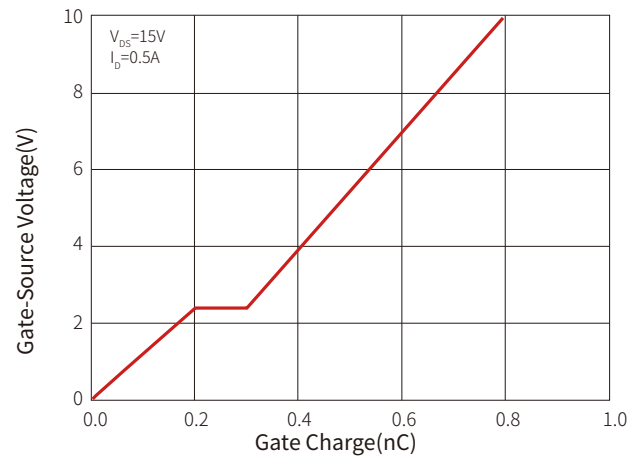
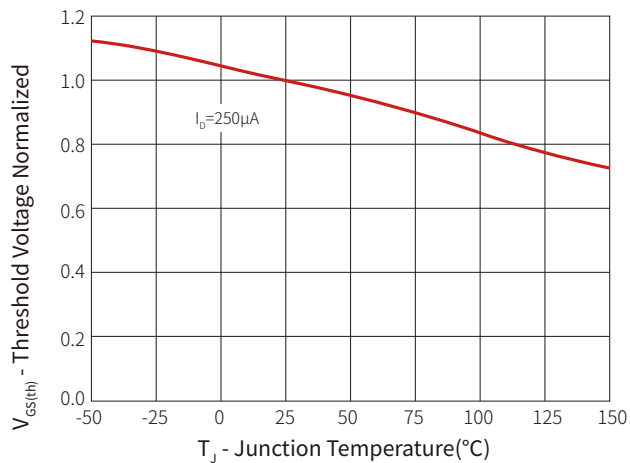
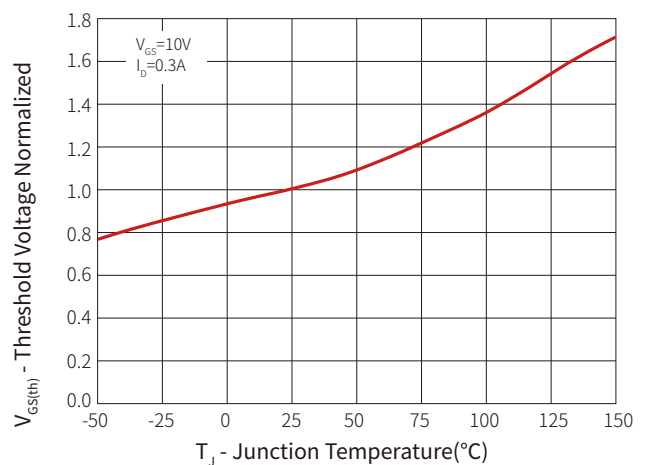
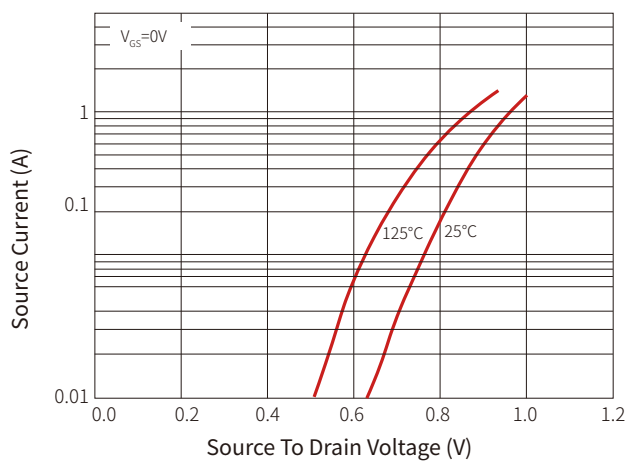
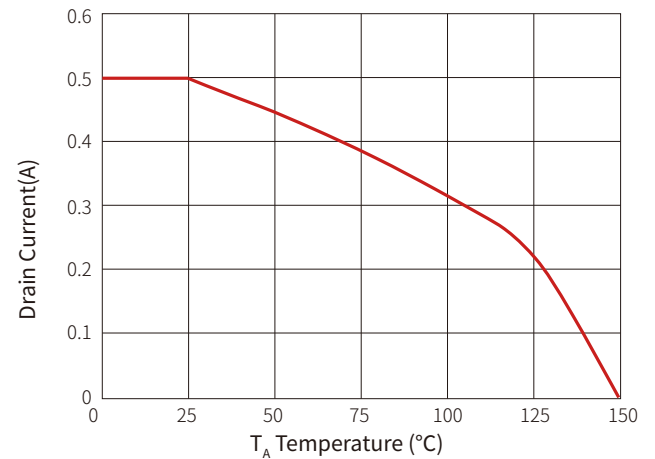
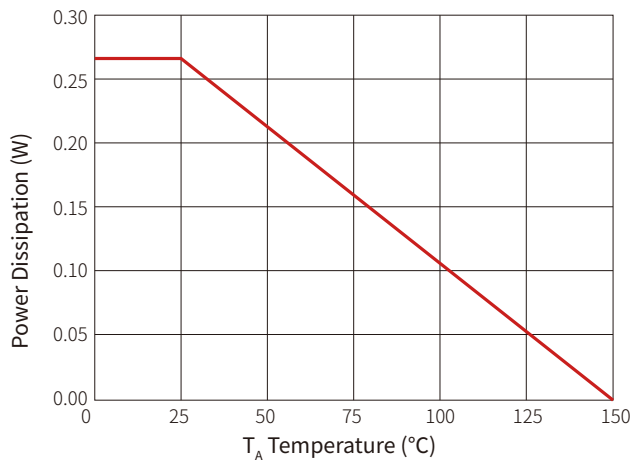
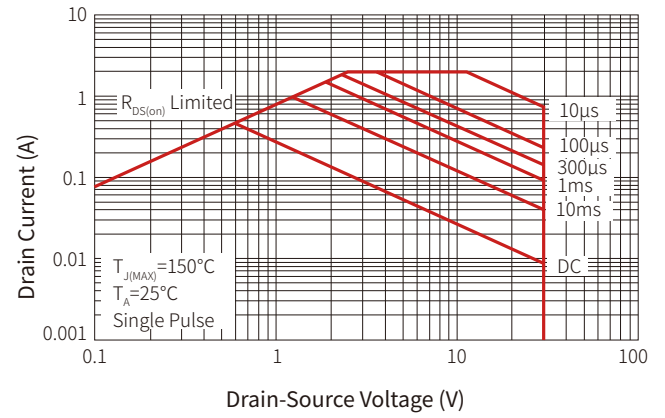
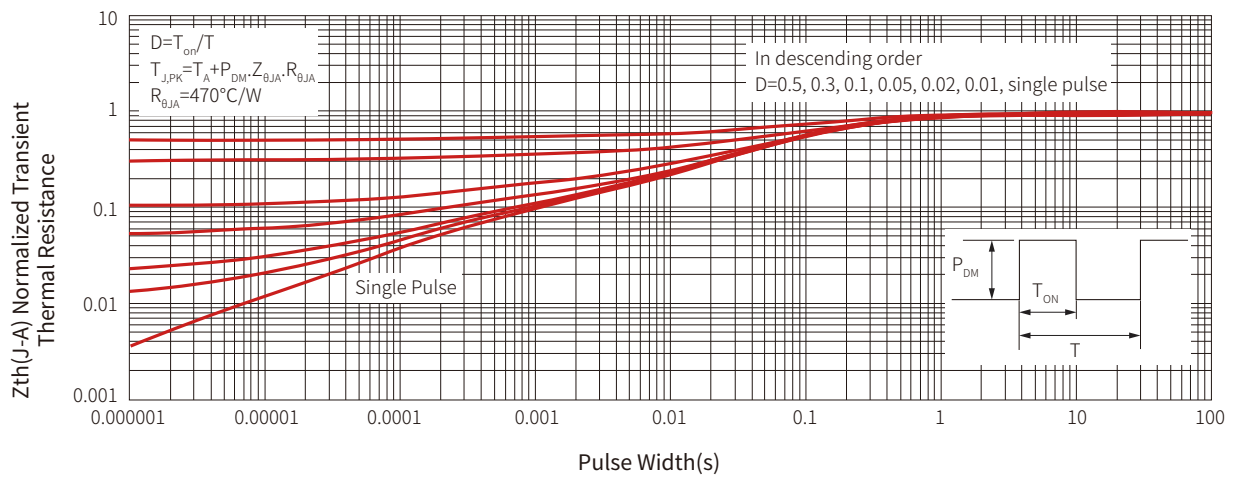
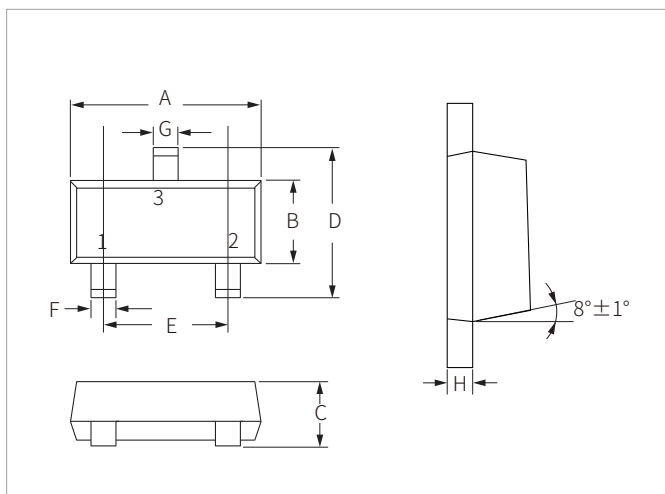
Fig.5 Capacitance Characteristics

Fig.6 Gate Charge

Fig.7 Normalized Threshold Voltage

Fig.8 Normalized On Resistance Characteristics

Fig.9 I_s — V_{SD}

Fig.10 Drain Current


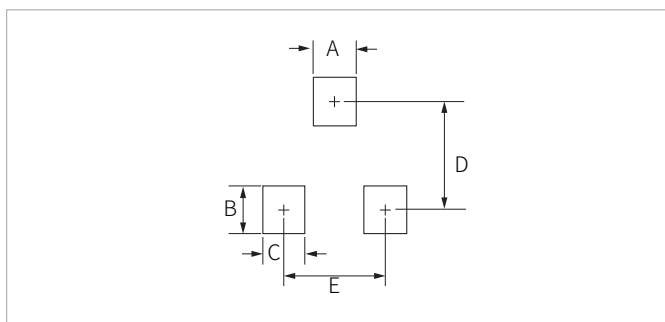
Fig.11 P_D Dissipation

Fig.12 Safe Operation Area

Fig.13 Normalized Transient Thermal Impedance


SOT-723 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.10	1.30	0.043	0.051
B	0.70	0.90	0.028	0.035
C	0.30	0.50	0.014	0.020
D	1.10	1.30	0.043	0.051
E	0.80TYP		0.031TYP	
F	0.175	0.25	0.007	0.010
G	0.225	0.30	0.009	0.012
H	0.09	0.13	0.003	0.005

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
	Dimensions	Dimensions
A	0.50	0.020
B	0.45	0.018
C	0.40	0.016
D	1.15	0.045
E	0.80	0.031

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM3020-7S	SOT-723	3000PCS	7"

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