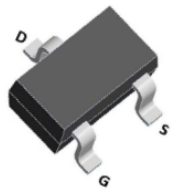
N-Channel Enhancement Mode MOSFET

Features

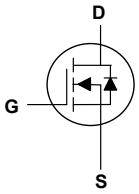
- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description

SOT-323



Symbol



Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	30	V
$R_{DS(ON)-Typ}$	75	mΩ
I_D	2	A

Absolute Maximum Ratings(T_A=25℃, Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
I_{DM} ①	Pulse Drain Current Tested		8	A
I_D	Continuous Drain Current	T_C=25°C	2	A
	Continuous Drain Current	T_C=100°C	1.2	A
P_D	Maximum Power Dissipation	T_C=25°C	0.8	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	415	℃/W

Note ①: Max. current is limited by bonding wire.

Note ②: UIS tested and pulse width are limited by maximum junction temperature 150℃.

Note ③: Surface Mounted on 1in^2 FR-4 board with 1oz.

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Electrical Characteristics (T_J=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1.0	---	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_D=2A	---	75	90	mΩ
		V_{DS}=4.5V, I_D=1A	---	110	140	
gfs	Forward Transconductance	V_{DS}=10V, I_D=2A	---	1	---	S
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, Freq.=1.0MHz	---	55	---	pF
C_{oss}	Output Capacitance		---	20	---	
C_{rss}	Reverse Transfer Capacitance		---	8	---	
$T_{d(on)}$	Turn-on Delay Time	V_{GS}=10V,V_{DD}=10V, I_D=22A,R_G=0.2Ω	---	4	---	nS
T_r	Turn-on Rise Time		---	30	---	
$T_{d(off)}$	Turn-off Delay Time		---	14	---	
T_f	Turn-off Fall Time		---	40	---	
Q_g	Total Gate Charge	V_{GS}=10V,V_{DD}=10V, I_D=0.3A	---	2	---	nC
Q_{gs}	Gate-Source Charge		---	0.6	---	
Q_{gd}	Gate-Drain Charge		---	1.2	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=2A, V_{GS}=0V	---	---	1.2	V

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤：Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1. Output Characteristics

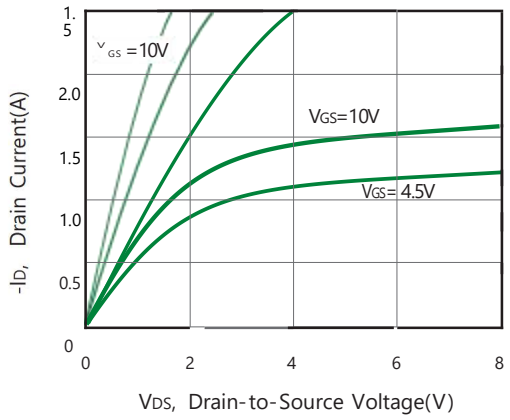


Figure 2. Body Diode Forward Voltage Variation with Source Current

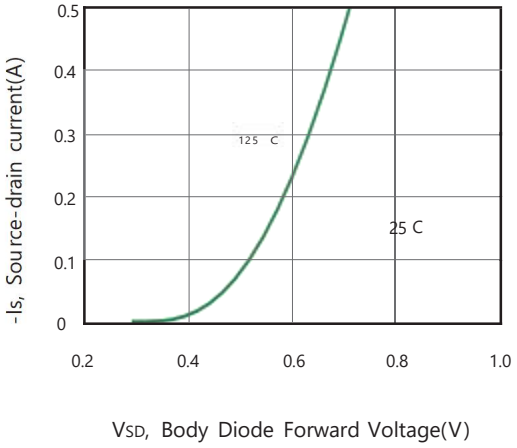


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

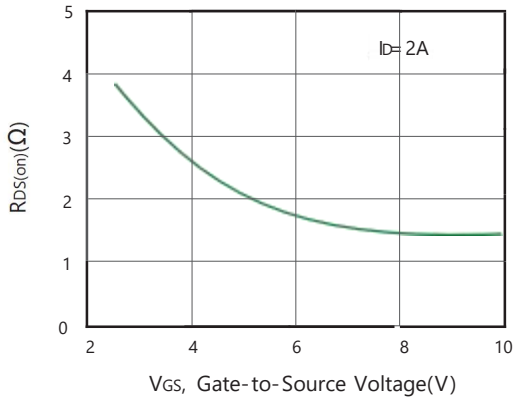


Figure 4. On-Resistance Variation with Drain Current and Temperature

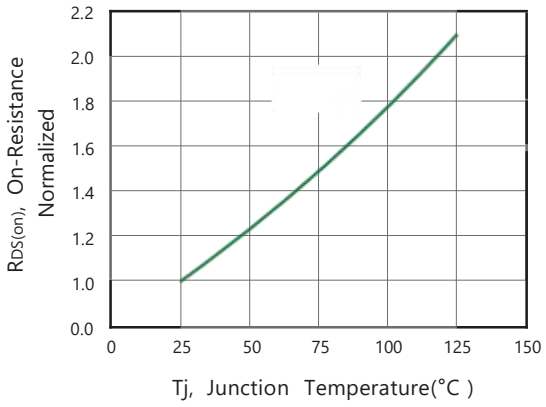


Figure 5. Gate Threshold Variation with Temperature

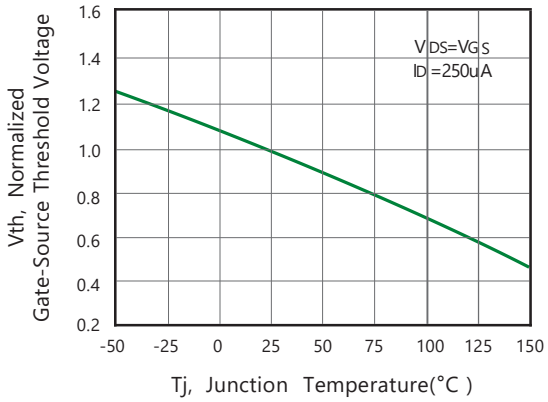


Figure 6. Gate Charge

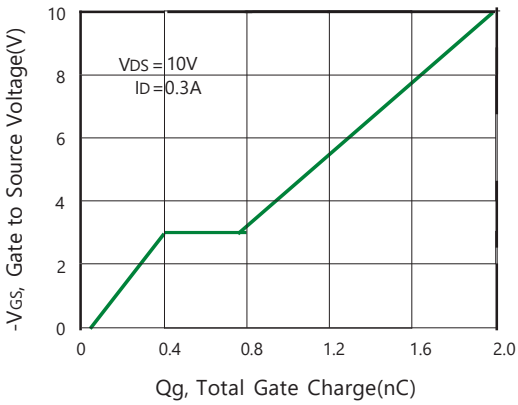


Figure 7. Capacitance

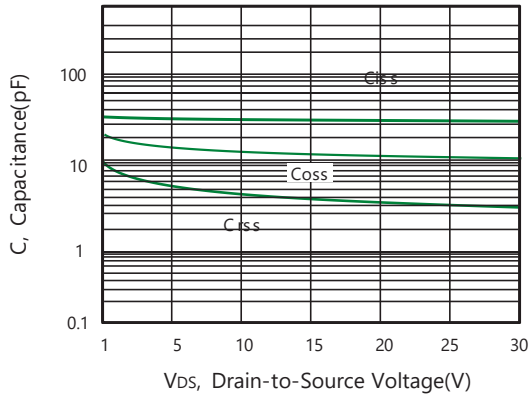
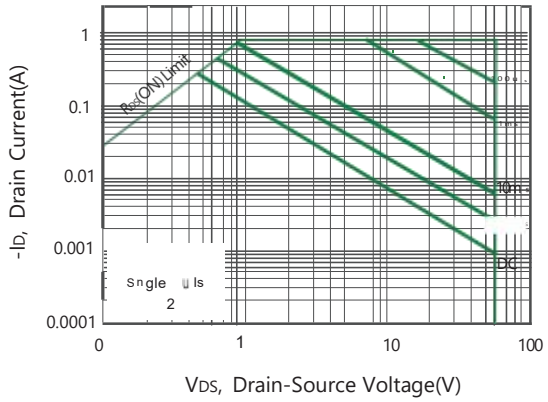


Figure 8. Maximum Safe Operating Area



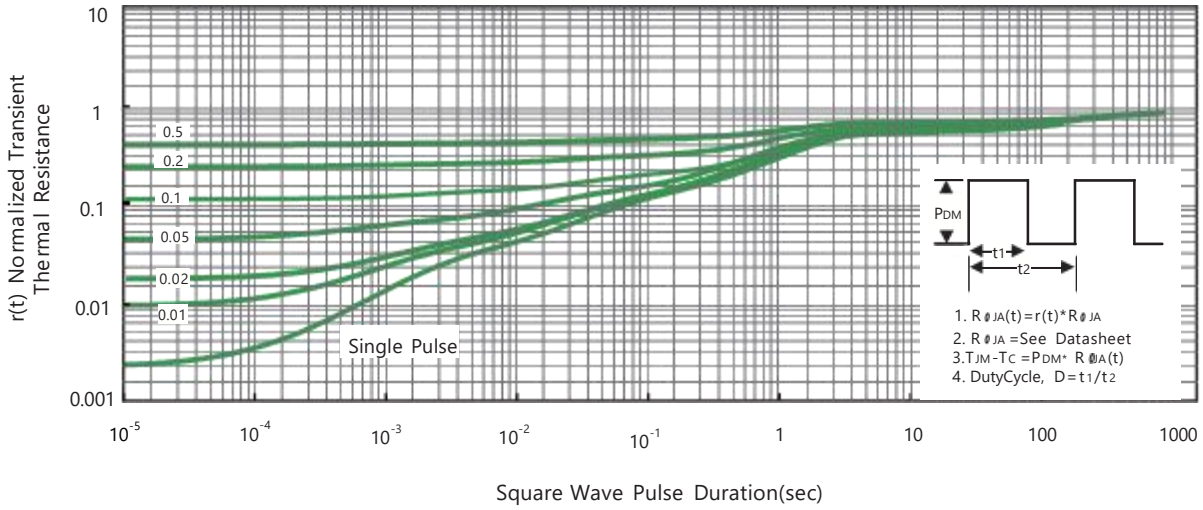
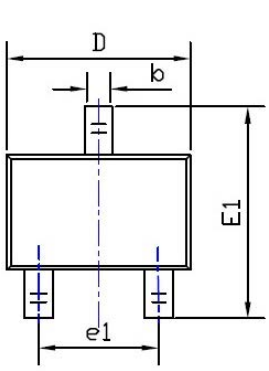
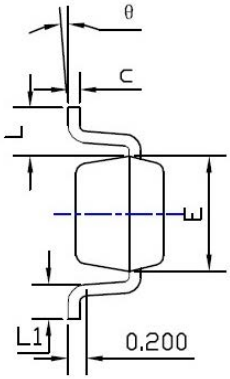


Figure 9. Normalized Thermal Transient Impedance Curve

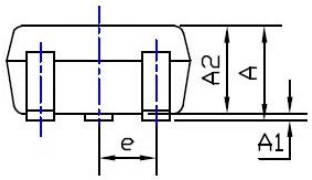
SOT323 Package Outline Dimensions



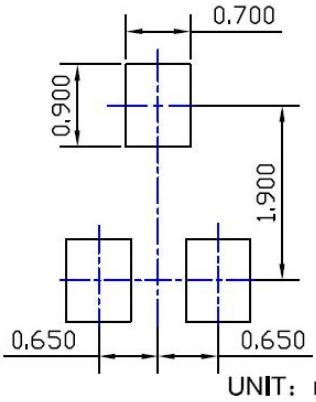
TOP VIEW



SIDE VIEW



SIDE VIEW



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.00	1.10	E_1	2.15	2.30	2.45
A_1	--	--	0.10	e	--	0.65	--
A_2	0.90	0.95	1.00	e_1	1.20	1.30	1.40
b	0.15	0.30	0.40	L	--	0.525	--
c	0.10	0.17	0.25	L_1	0.26	0.36	0.46
D	1.80	2.00	2.20	θ	0°		8°
E	1.15	1.25	1.35				