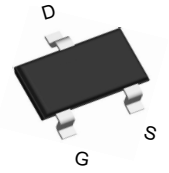
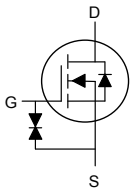
N-Channel Enhancement Mode MOSFET

Features

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

Pin Description

SOT-23	Symbol
	

Applications

- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch

V_{DSS}	20	V
$R_{DS(ON)-Typ}$	110	mΩ
I_D	1.5	A

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

Symbol	Parameter		N-Channel	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±10	V
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
I_{DM} ①	Pulse Drain Current Tested		6	A
I_D	Continuous Drain Current	T_C=25℃	1.5	A
P_D	Maximum Power Dissipation	T_C=25℃	0.43	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient	75	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	24	℃/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 1in² 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	20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	0.5	---	1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±10V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=4.5V , I_D=0.6A	---	110	180	mΩ
		V_{GS}=2.5V , I_D=0.5A	---	160	250	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Freq.=1MHz	---	95	---	pF
C_{oss}	Output Capacitance		---	21	---	
C_{rss}	Reverse Transfer Capacitance		---	12	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DS}=10V ,I_D=0.75A, V_{GS}=4.5V , R_G=3Ω	---	24	---	nS
T_r	Turn-on Rise Time		---	86		
$T_{d(off)}$	Turn-off Delay Time		---	750	---	
T_f	Turn-off Fall Time		---	420	---	
gfs	Forward Transconductance	V_{DS}=5V , I_D=1.5A	---	1	---	S
Q_g	Total Gate Charge	V_{DS}=10V , V_{GS}=4.5V , I_D=0.75A	---	1.4	---	nC
Q_{gs}	Gate-Source Charge		---	0.18	---	
Q_{gd}	Gate-Drain Charge		---	0.28	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}④	Diode Forward Voltage	V_{GS}=0V ,I_S=1.5A , T_J=25℃	---	---	1.2	V

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

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

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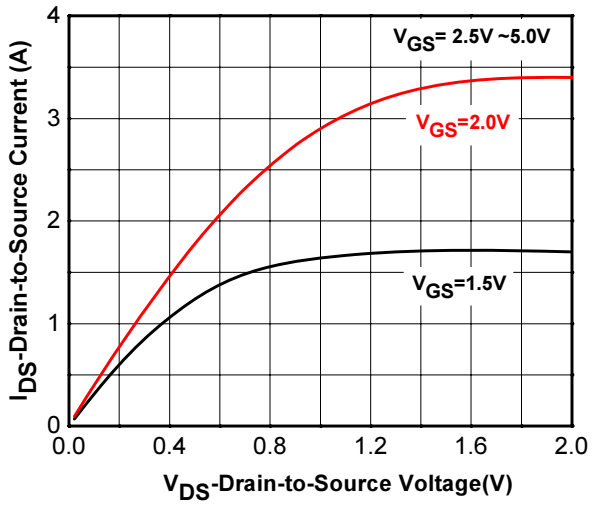
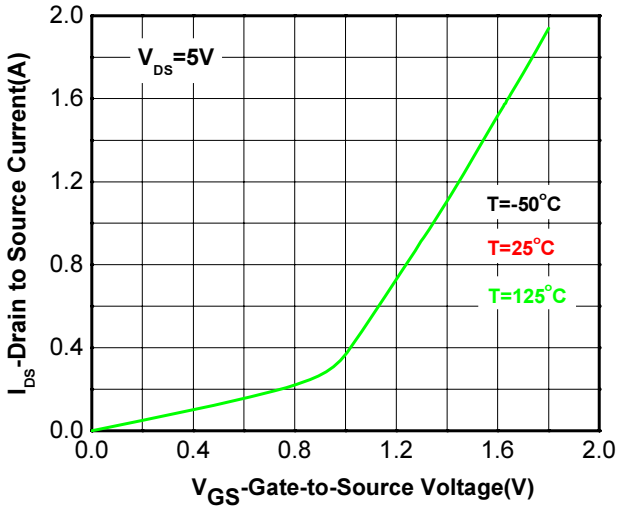
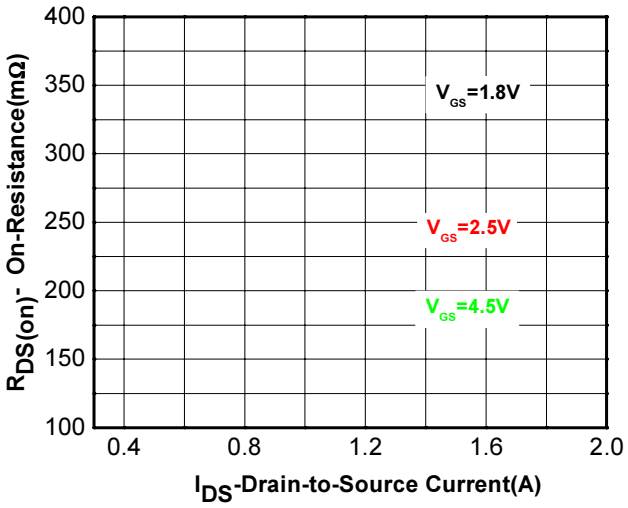
Typical Characteristics



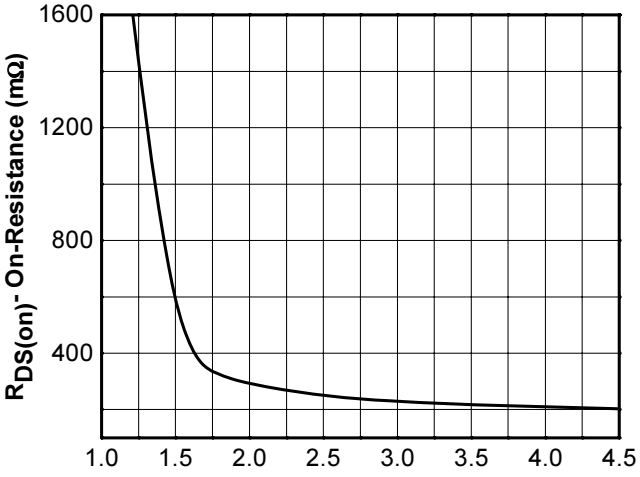
Output Characteristics



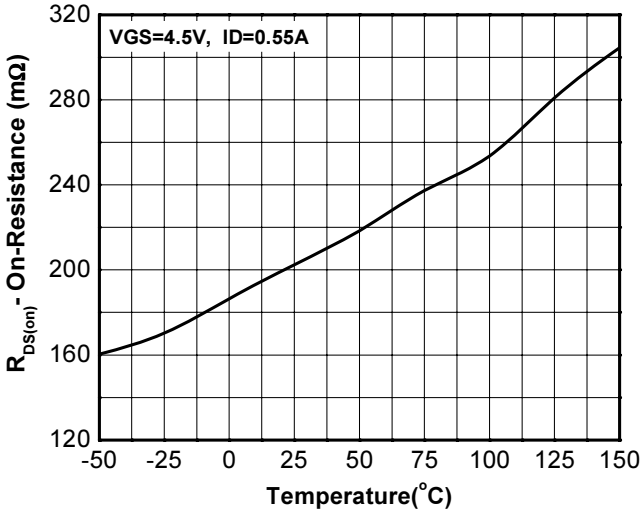
Transfer Characteristics



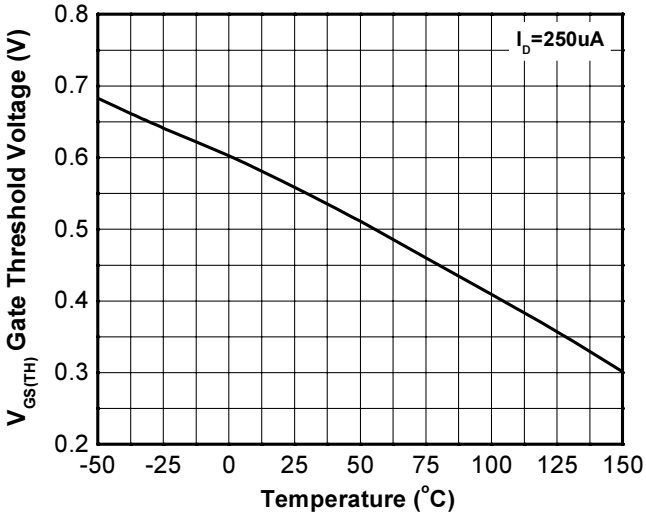
On Resistance vs. Drain Current



On Resistance vs. V_{GS} vs. Temperature



On Resistance vs. Junction Temperature



Threshold Voltage

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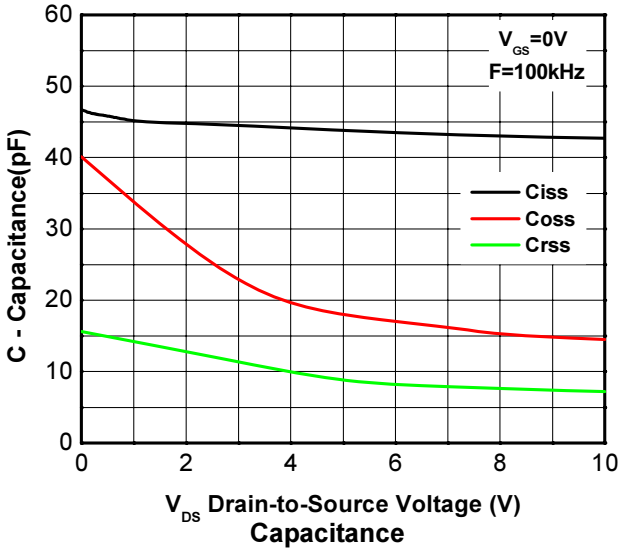
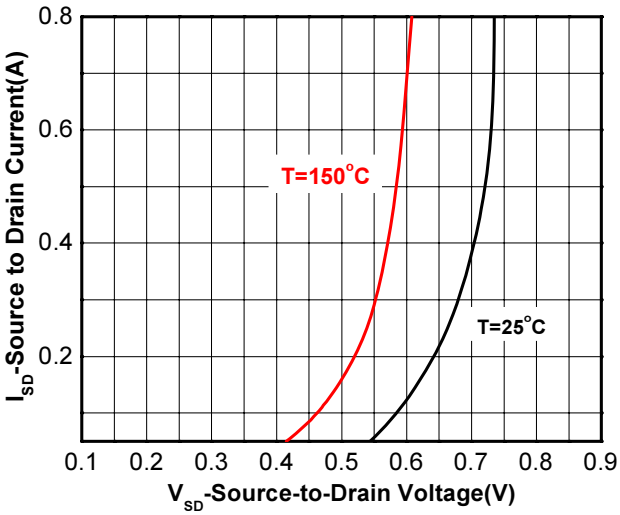
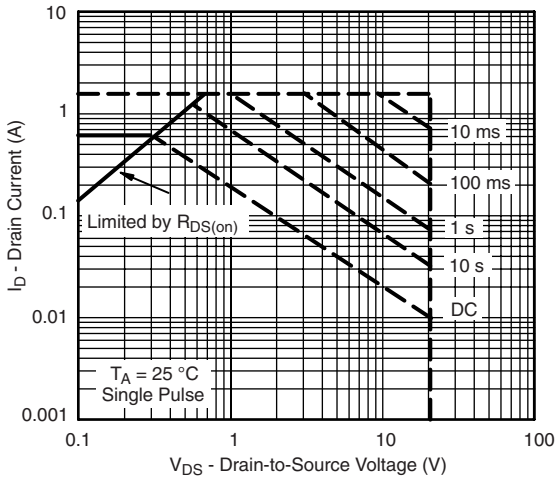


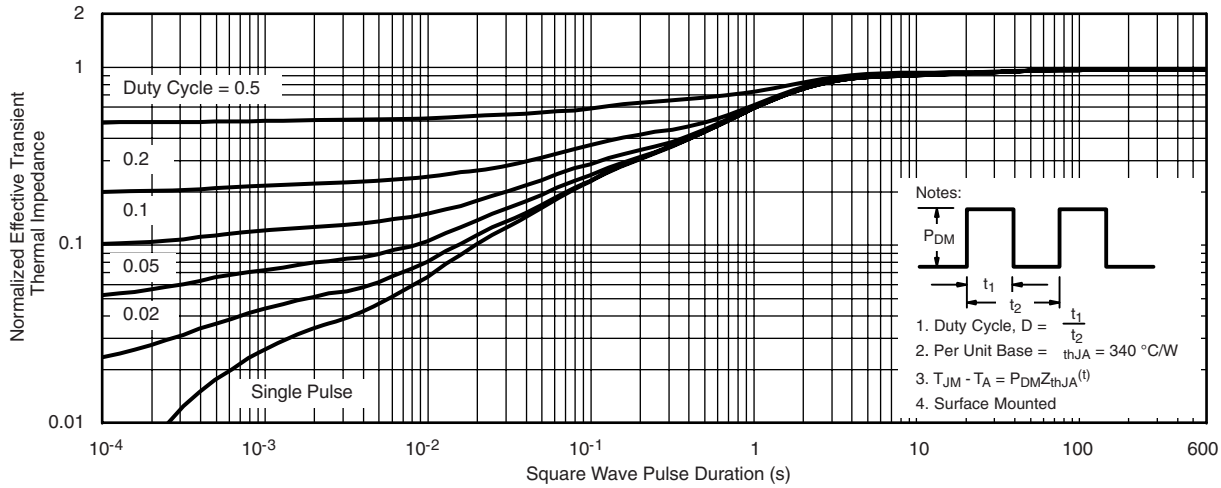
Capacitance



Body Diode Characteristics

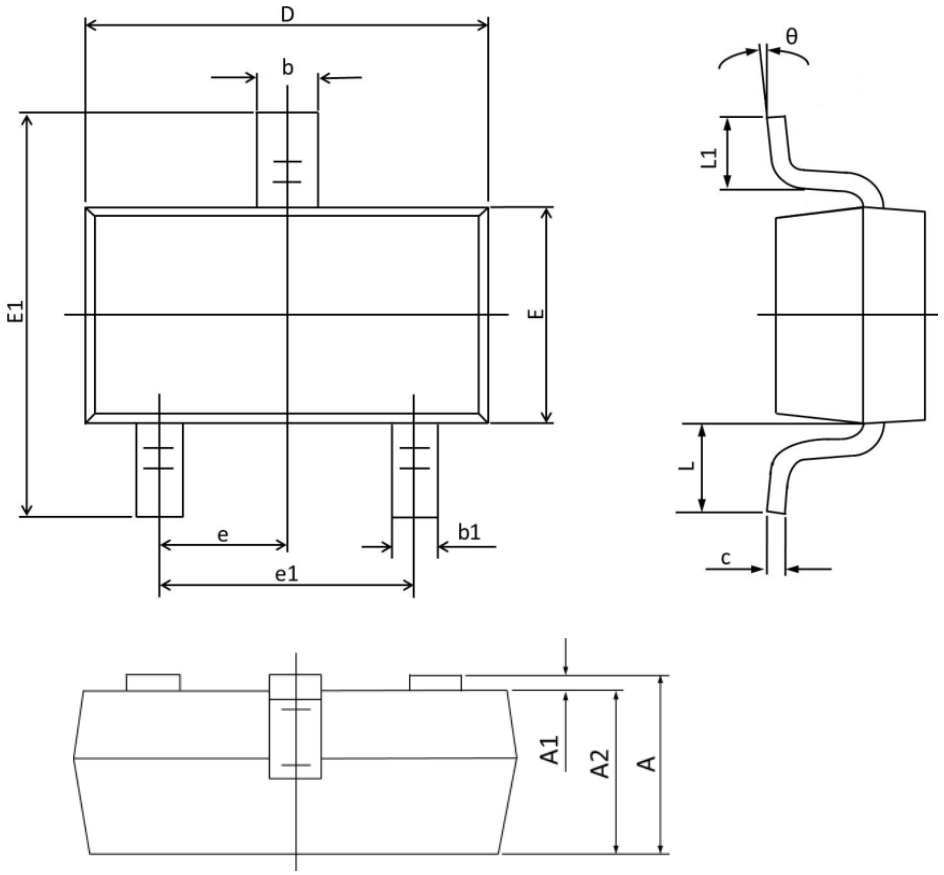


Safe Operation Area, Junction-to-Ambient



Transient thermal response (Junction-to-Ambient)

SOT523 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.70	0.80	0.90	E	0.70	0.80	0.90
A1	0.00	---	0.10	E1	1.40	1.60	1.75
A2	0.70	0.75	0.80	e	0.50 REF		
b	0.25	0.30	0.35	e1	0.90	1.00	1.10
b1	0.15	0.20	0.25	L	0.30	0.36	0.48
c	0.10	0.15	0.20	L1	0.26	0.36	0.46
D	1.50	1.60	1.75	θ	0°		8°