

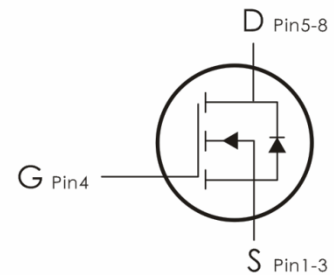
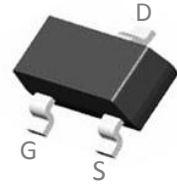
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=9A, R_{DS(ON)} < 10m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DO3012AA	3012A	SOT-23-3	3000pcs/Reel

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous ($T_A=25^\circ\text{C}$) ¹	9	A
	Drain Current - Continuous ($T_A=100^\circ\text{C}$) ¹	5.8	
I_{DM}	Drain Current - Pulsed ²	30	
E_{AS}	Single Pulse Avalanche Energy ³	18	mj
P_D	Power Dissipation ($T_A=25^\circ\text{C}$) ⁴	1.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	83	$^\circ\text{C}/\text{W}$

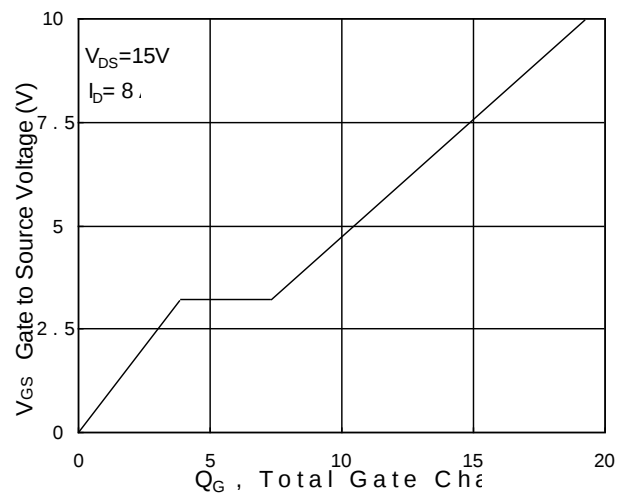
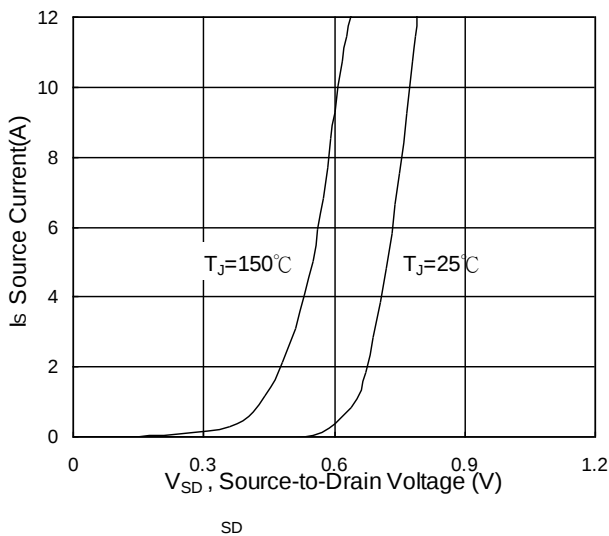
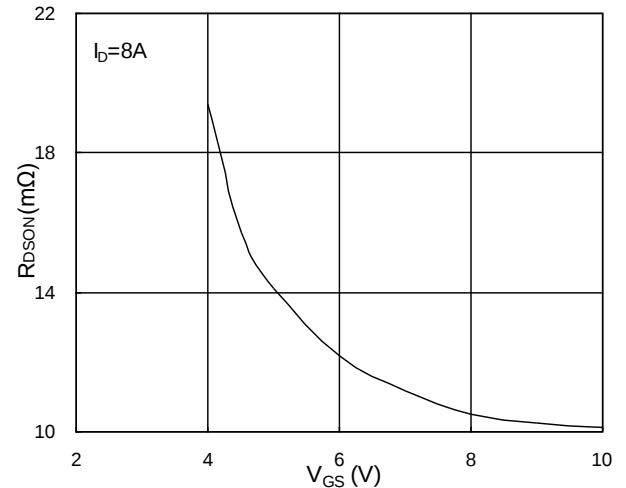
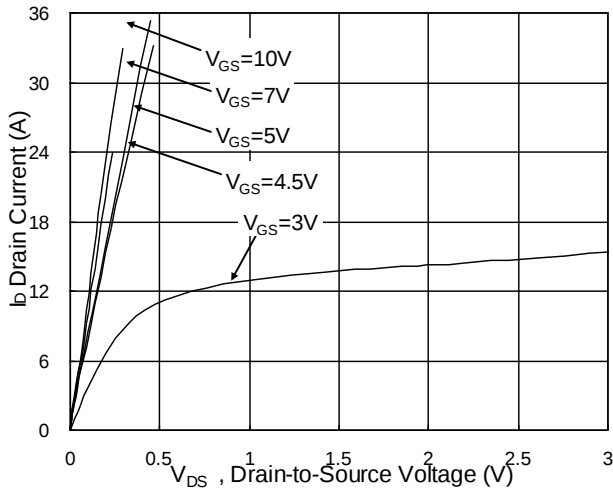
Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	30	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =150V , V _{GS} =0V	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0V	---	---	± 100	nA
On Characteristics ³						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.2	1.5	2.5	V
R _{DS(ON)}	Static Drain-Source On Resistance ²	V _{GS} =10V, I _D =8A	---	9	10	m Ω
		V _{GS} =4.5V, I _D =6A	---	12	18	
G _{FS}	Forward Transconductance	V _{DS} =5V, I _D =8A	---	24	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	940	1316	pF
C _{oss}	Output Capacitance		---	131	183	
C _{rss}	Reverse Transfer Capacitance		---	109	153	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =15V R _{GEN} =1.5 Ω , V _{GS} =10V I _D =8A	---	4.2	8.4	ns
t _r	Rise Time		---	8.2	15	ns
t _{d(off)}	Turn-Off Delay Time		---	31	62	ns
t _f	Fall Time		---	4	8	ns
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =15V, I _D =8A	---	9.63	13.5	nC
Q _{gs}	Gate-Source Charge		---	3.88	5.4	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	3.44	4.8	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25℃	---	---	1	V
I _S	Continuous Source Current ^{1.5}	VG=VD=0V	---	---	9	A
I _{SM}	Pulsed Source Current ^{2.5}		---	---	30	
T _{rr}	Body Diode Reverse Recovery Time	I _F =8A , dI/dt=100A/μs , T _J =25℃	---	8	---	Ns
Q _{rr}	Body Diode Reverse Recovery Charge		---	2.9	---	Nc

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DS}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=22A$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics:



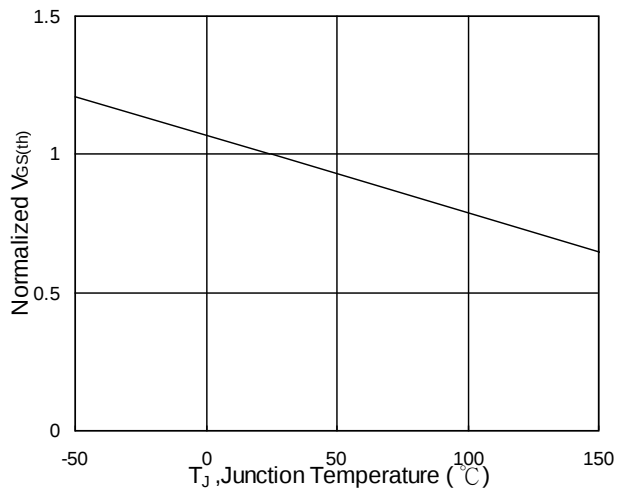


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

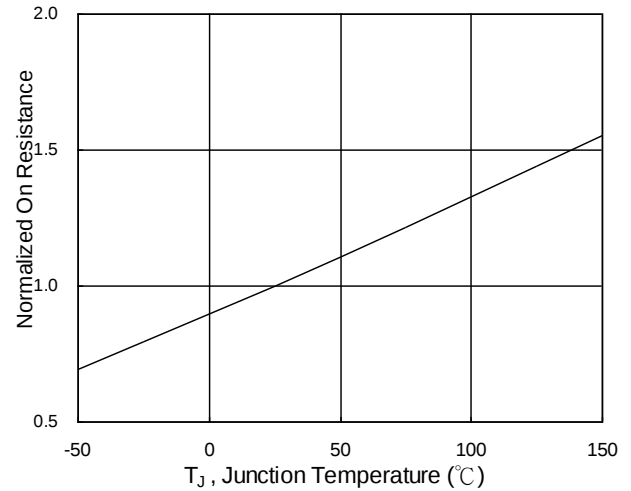


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

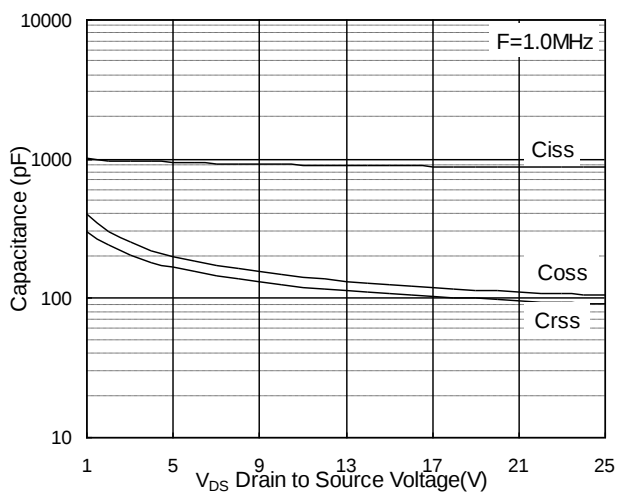


Fig.7 Capacitance

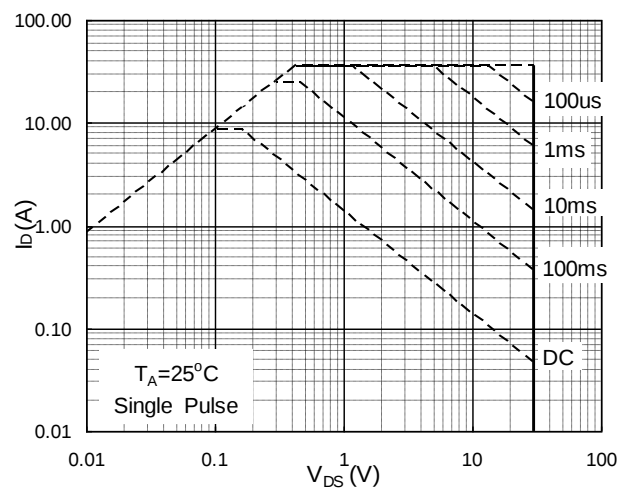


Fig.8 Safe Operating Area

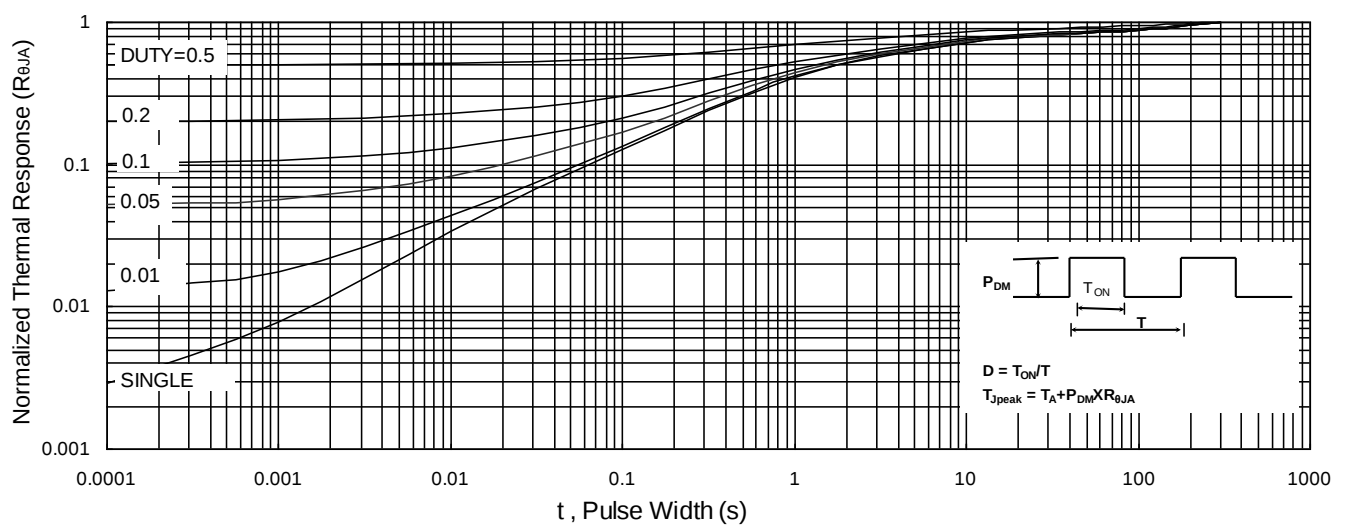
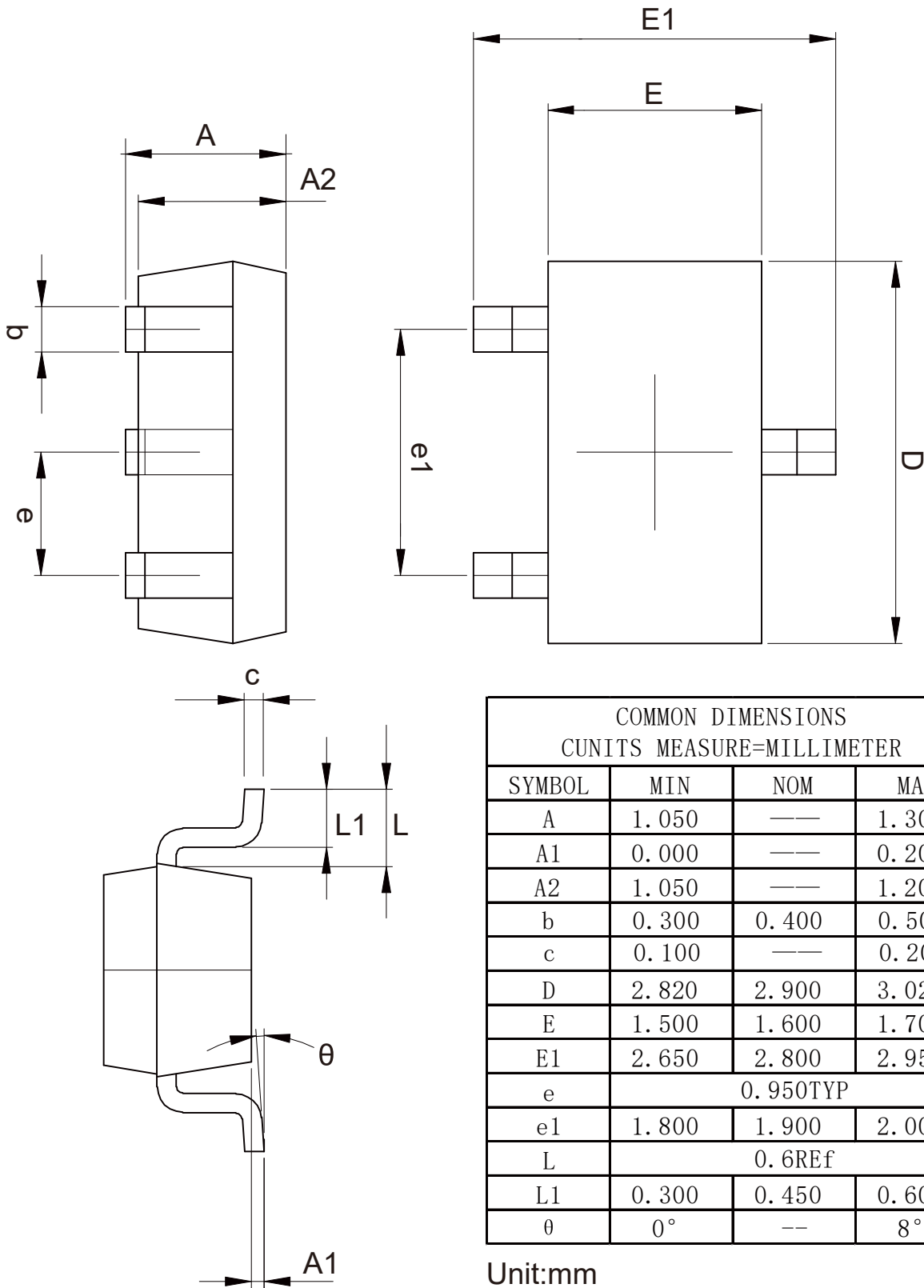
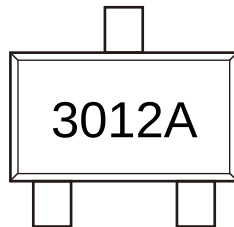


Fig.9 Normalized Maximum Transient Thermal Impedance

SOT-23-3Package Outline Data



Marking Information:



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