

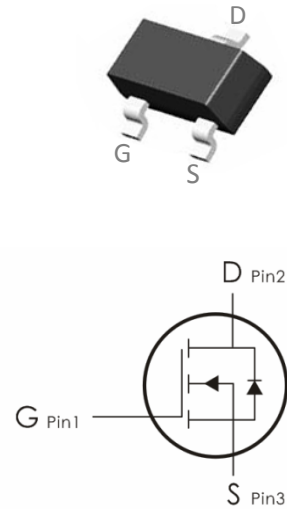
Description:

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) $V_{DS}=30V, I_D=8A, R_{DS(ON)} < 14m\Omega @ V_{GS}=-10V$
- 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.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ C$	8	A
	Continuous Drain Current- $T_A=100^\circ C$	5.5	
I_{DM}	Pulsed Drain Current ^{note1}	40	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	17	mJ
P_D	Power Dissipation - $T_A=25^\circ C$	2.2	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	57	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DO3014AA	3014A	SOT-23-3

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =30V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.4	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ^{note3}	V _{GS} =10V,I _D =10A	---	10	14	m Ω
		V _{GS} =4.5V,I _D =5A	---	15	20	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	580	---	pF
C _{oss}	Output Capacitance		---	110	---	
C _{rss}	Reverse Transfer Capacitance		---	92	---	
Q _g	Gate Charge	V _{GS} =10V V _{DS} =15V I _D =10A	---	15	---	nC
Q _{gs}	Gate-Source Charge		---	4.7	---	
Q _{gd}	Gate-Drain Charge		---	3.6	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =30V, I _D = 20A, R _{REN} =3 Ω ,V _{GS} =10V	---	5	---	ns
t _r	Rise Time		---	8	---	ns
t _{d(off)}	Turn-Off Delay Time		---	21	---	ns
t _f	Fall Time		---	7	---	ns
Drain-Source Diode Characteristics						
I _S	Continuous Drain to Source Diode	VD=VG=0V	---	----	8	A
I _{SM}	Pulsed Drain to Source Diode	VD=VG=0V	---	---	40	A

V_{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =10 A	---	---	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs	---	7	---	ns
Q_{rr}	Body Diode Reverse Recovery		---	5.9	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : T_J=25°C, V_{DD}=15V, V_G=10V, L=0.5mH, R_g=25Ω, I_{AS}=8.3A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics:

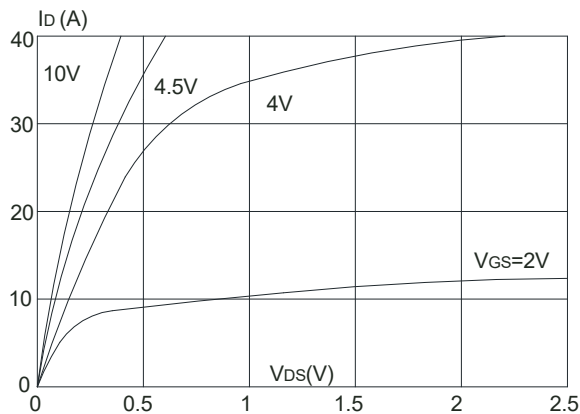


Figure 1: Output Characteristics

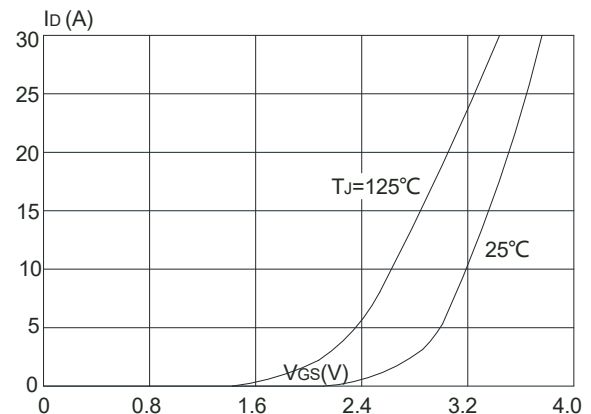


Figure 2: Typical Transfer Characteristics

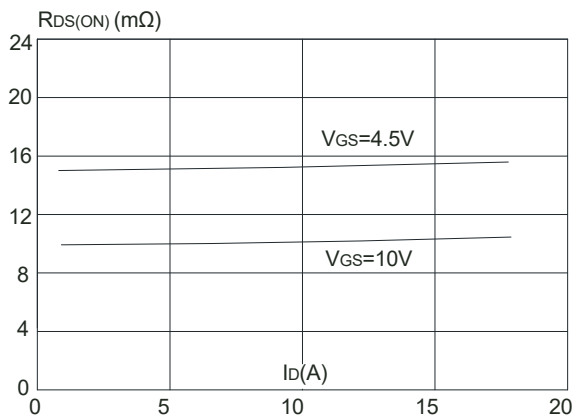


Figure 3: On-resistance vs. Drain Current

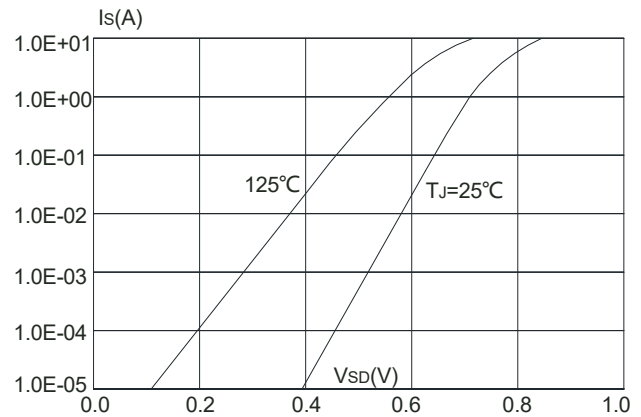


Figure 4: Body Diode Characteristics

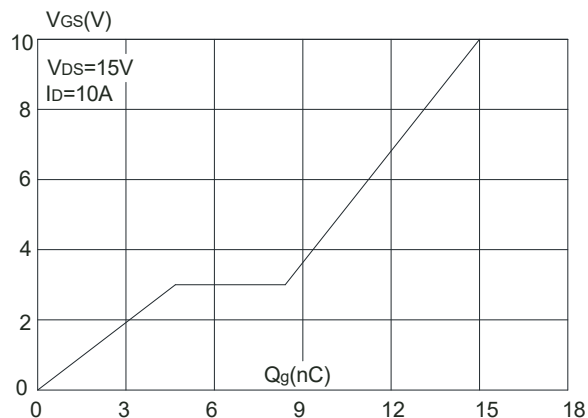


Figure 5: Gate Charge Characteristics

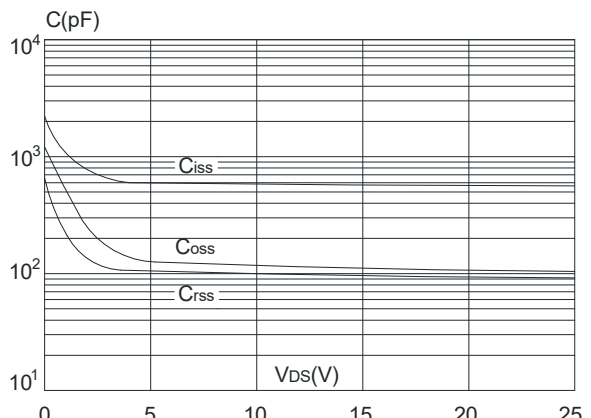


Figure 6: Capacitance Characteristics

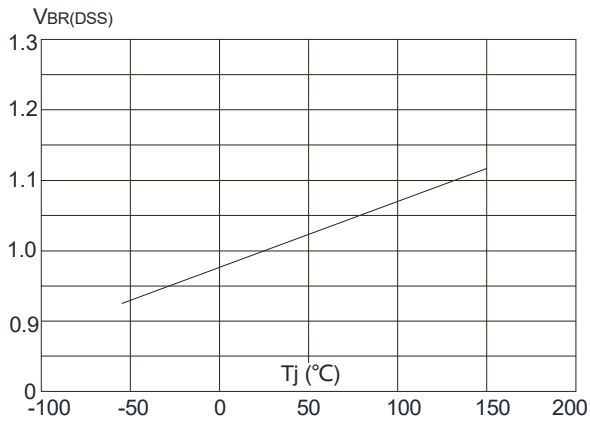


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

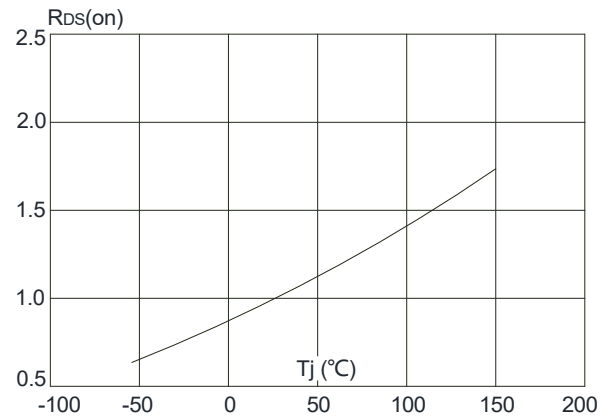


Figure 8: Normalized on Resistance vs. Junction Temperature

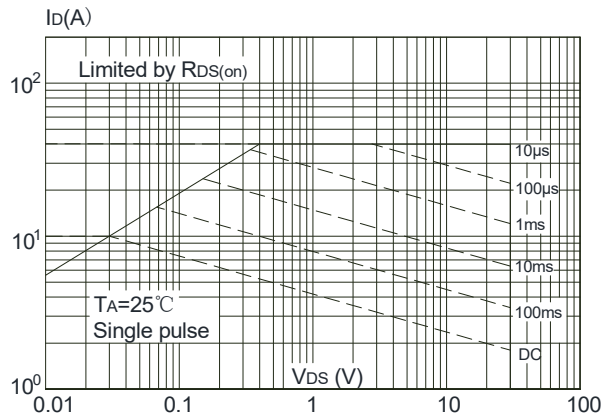


Figure 9: Maximum Safe Operating Area

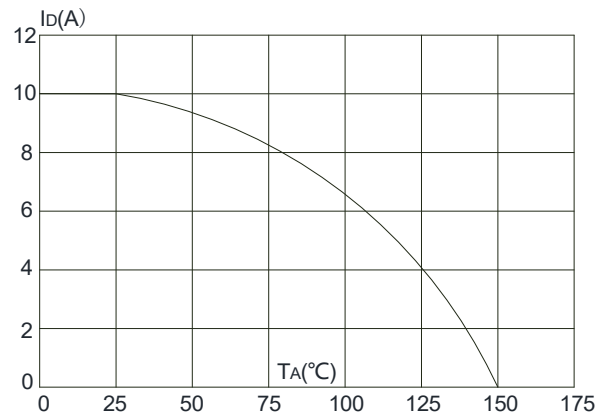


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

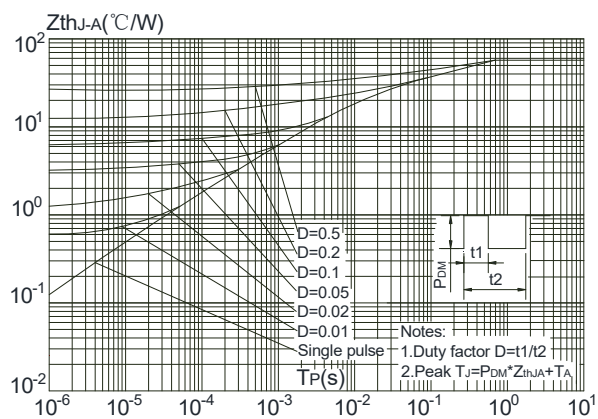


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient