

Description:

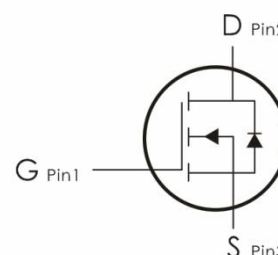
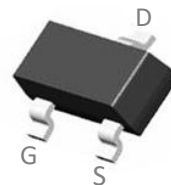
This N-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=4A, R_{DS(ON)} < 38m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}$	4	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$	2.6	
I_{DM}	Pulse Drain Current Tested ^{note1}	16	A
P_D	Power Dissipation- $T_A=25^\circ\text{C}$	1	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	125	$^\circ\text{C}/\text{W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DO3406A	3406A	SOT-23

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ 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	1.5	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ^{note2}	V _{GS} =10V, I _D =4A	---	29	38	m Ω
		V _{GS} =4.5V, I _D =3A	---	45	65	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	230	---	pF
C _{OSS}	Output Capacitance		---	40	---	
C _{rss}	Reverse Transfer Capacitance		---	30	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =15V, I _D =4A, V _{GS} =10V, R _G =3 Ω	---	4	---	ns
t _r	Rise Time		---	2.1	---	ns
t _{d(off)}	Turn-Off Delay Time		---	15	---	ns
t _f	Fall Time		---	3.2	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =2A	---	3	---	nC
Q _{gs}	Gate-Source Charge		---	0.5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	0.8	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Forward Voltage	V _{GS} =0V, I _S =-4A	---	---	1.2	V
I _S	Source drain current(Body Diode)	---	---	---	4	A

I_{SM}	Source Diode Forward Current	---	---	---	16	A
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Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width $\leq$ 300 μ s, Duty Cycle $\leq$ 0.5%

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

Figure1: Output Characteristics

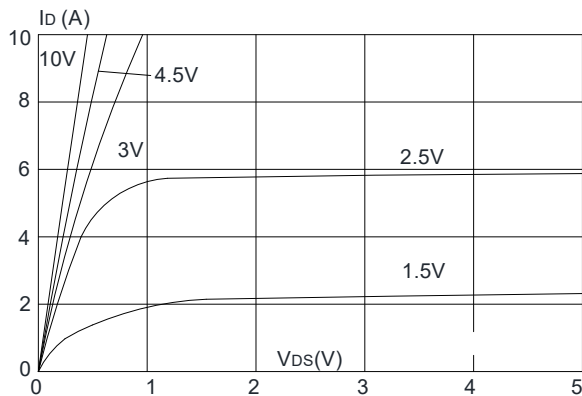


Figure 2: Typical Transfer Characteristics

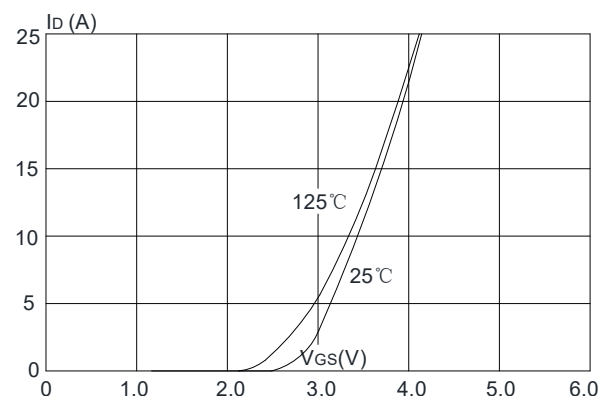


Figure 3: On-resistance vs. Drain Current

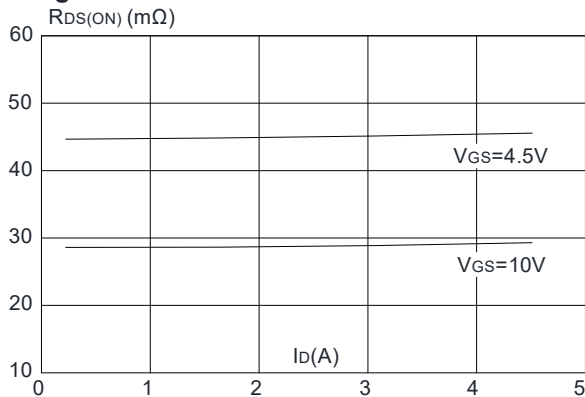


Figure 4: Body Diode Characteristics

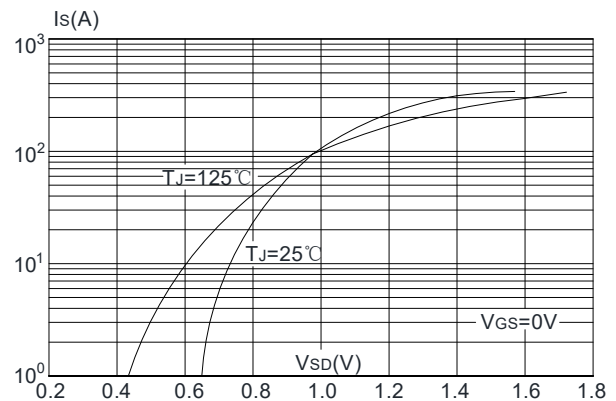


Figure 5: Gate Charge Characteristics

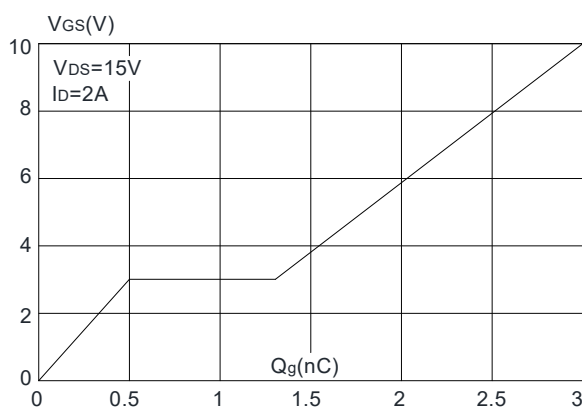


Figure 6: Capacitance Characteristics

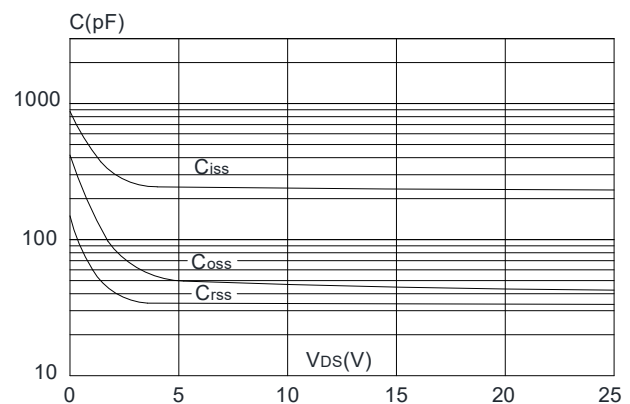


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

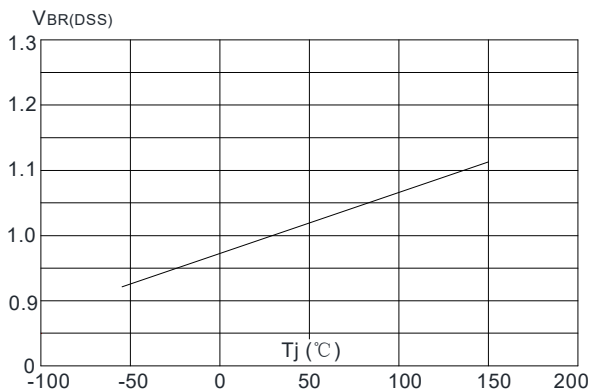


Figure 8: Normalized on Resistance vs. Junction Temperature

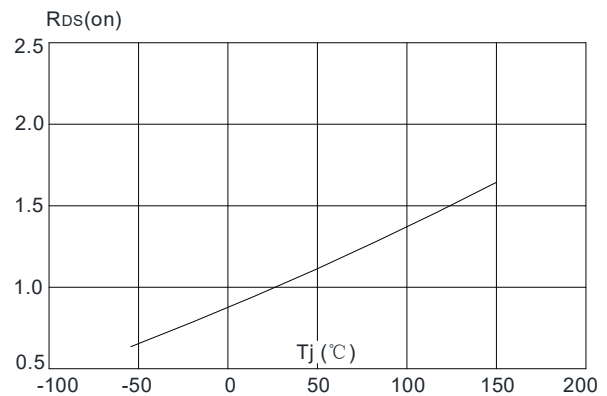


Figure 9: Maximum Safe Operating Area

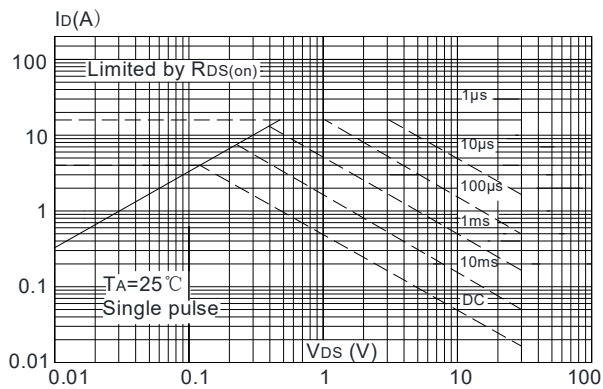


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

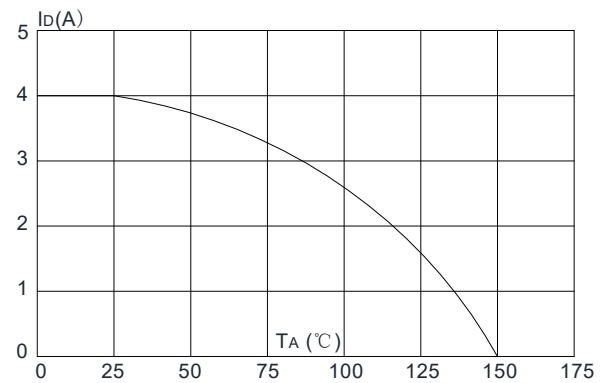


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

