

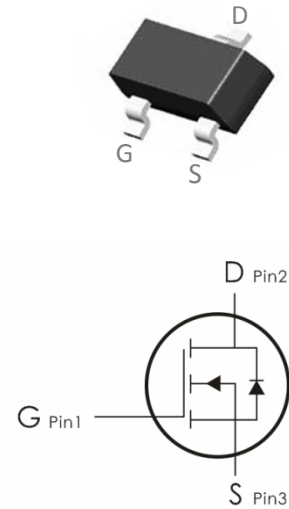
Description:

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) $V_{DS}=40V, I_D=5A, R_{DS(ON)} < 40m\Omega @ V_{GS}=10V$ (Typ : $30m\Omega$)
- 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	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ C$	5	A
	Continuous Drain Current- $T_A=100^\circ C$	3	
I_{DM}	Drain Current – Pulsed ¹	20	
P_D	Power Dissipation	1.6	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	78	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DO2318B	2318B	SOT-23

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	40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =40V	---	---	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	1.0	1.5	2.2	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =4A	---	30	40	m Ω
		V _{GS} =4.5V, I _D =3A	---	40	60	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	435	---	pF
C _{Oss}	Output Capacitance		---	58	---	
C _{rss}	Reverse Transfer Capacitance		---	35	---	
Q _g	Gate Charge ^{2.3}	V _{GS} = 10 V, V _{DS} =20V, I _D =3A	---	11	---	nC
Q _{gs}	Gate-Source Charge ^{2.3}		---	2	---	
Q _{gd}	Gate-Drain Charge ^{2.3}		---	2.5	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{2.3}	V _{DD} =20V, I _D =1A V _{GS} =4.5V, R _G =25 Ω	---	10	---	ns
t _r	Rise Time ^{2.3}		---	8	---	ns
t _{d(off)}	Turn-Off Delay Time ^{2.3}		---	29	---	ns
t _f	Fall Time ^{2.3}		---	12	---	ns
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =5A	---	---	1.2	V

I_S	Continuous Source Current	$V_G=V_D=0V$ Force Current	---	---	5	A
I_{SM}	Pulsed Source Current ³		---	---	20	
T_{rr}	Reverse Recovery Time	$T_J=25^{\circ}C$, $I_F=5A, dI/dt=100A/\mu s$	---	20	---	ns
Q_{rr}	Reverse Recovery Charge		---	11	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature

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

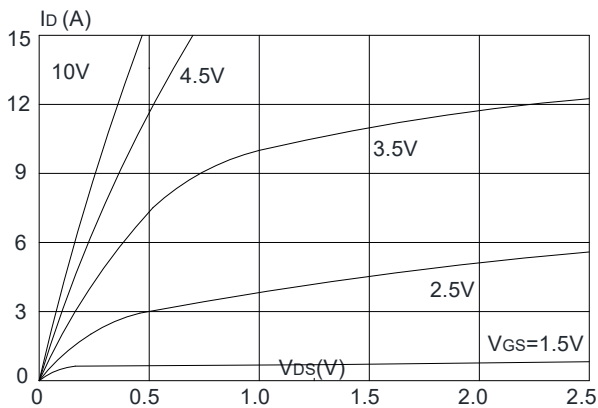


Figure1: Output Characteristics

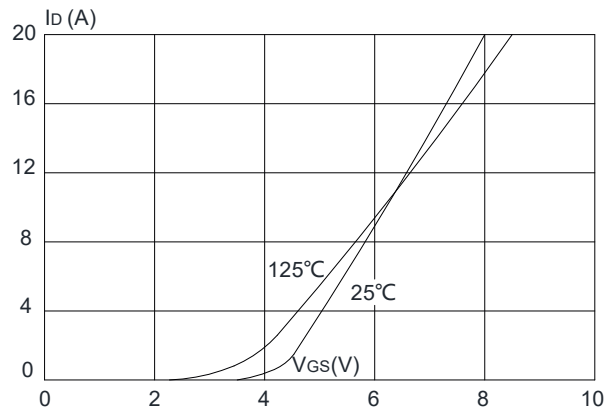


Figure 2: Typical Transfer Characteristics

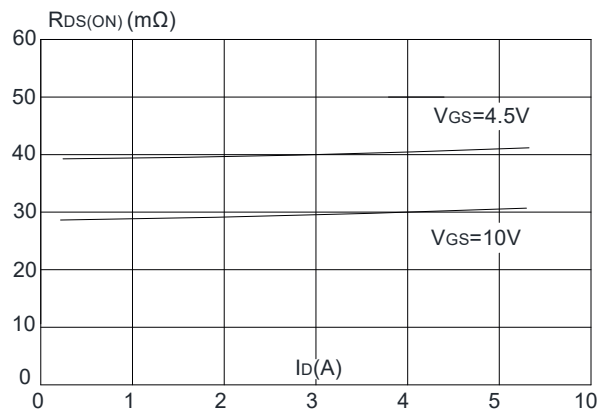


Figure 3: On-resistance vs. Drain Current

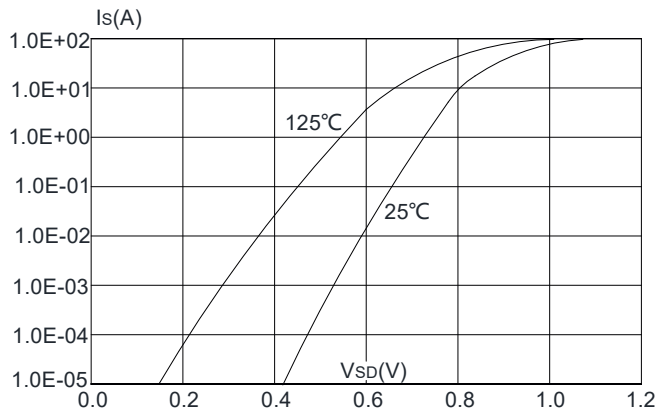


Figure 4: Body Diode characteristics

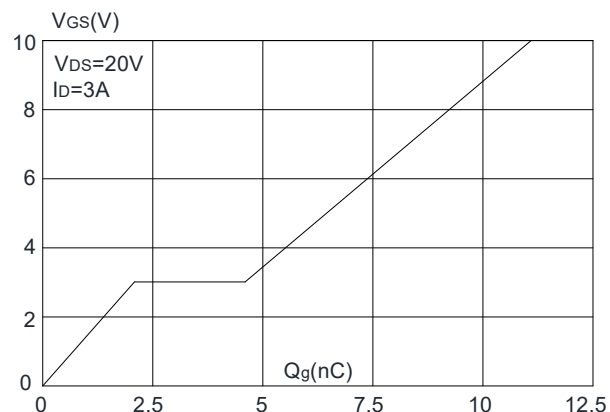


Figure 5: Gate Charge Characteristics

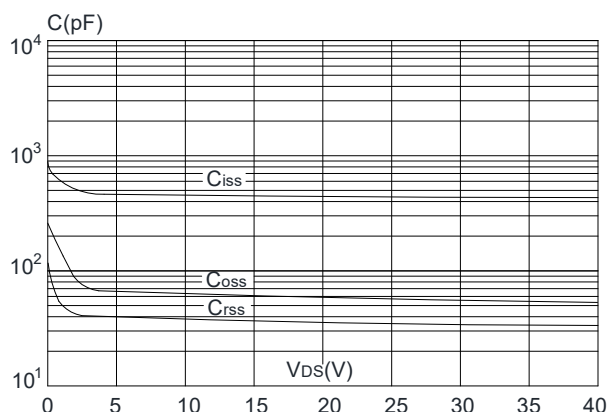


Figure 6: Capacitance Characteristics

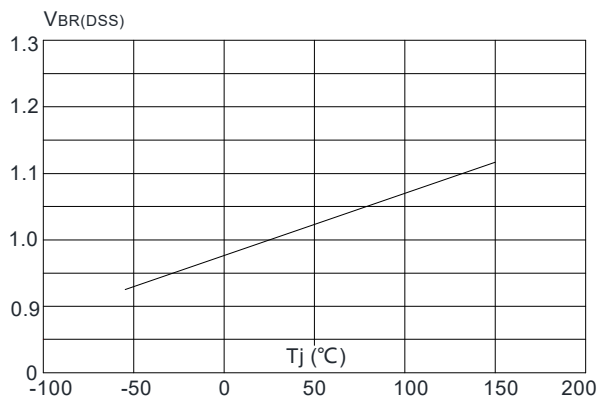


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

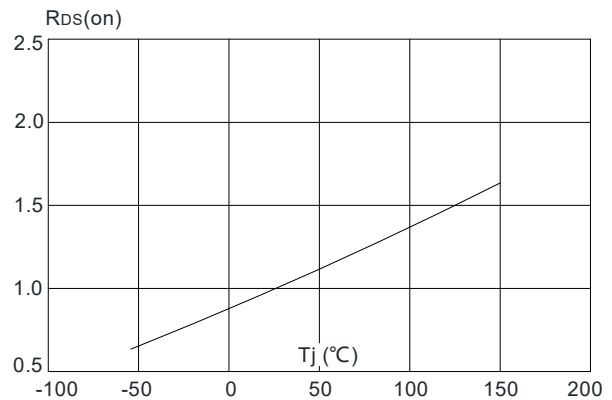


Figure 8: Normalized on Resistance vs. Junction Temperature

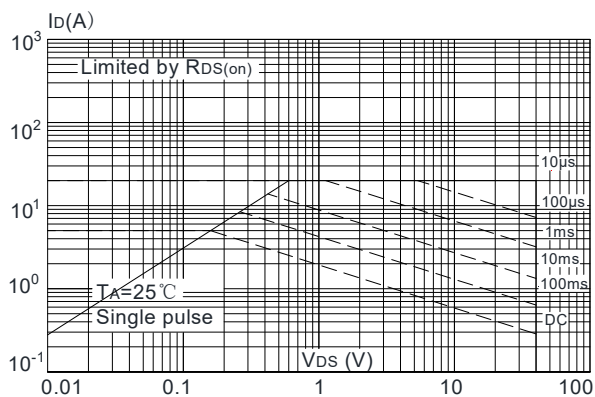


Figure 9: Maximum Safe Operating Area

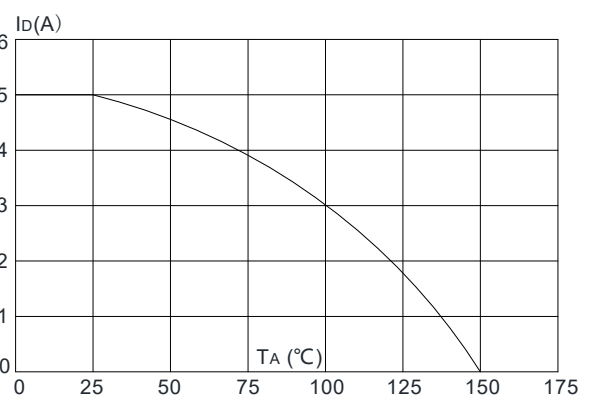


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

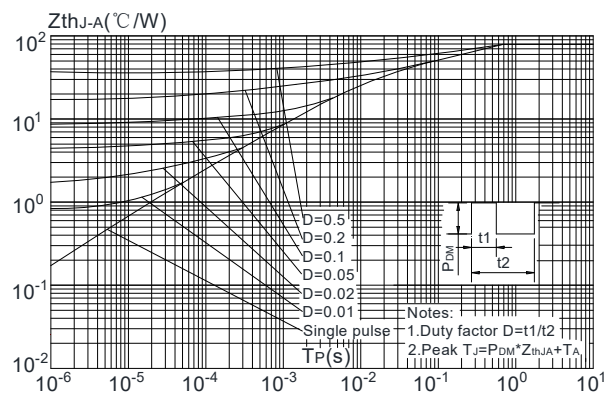


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient