

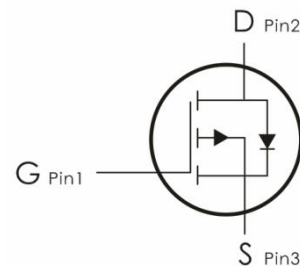
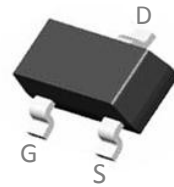
Description:

This P-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) $V_{DS}=-20V, I_D=-7A, R_{DS(on)} < 20\text{ m}\Omega$ @ $V_{GS}=-4.5V$ (Typ : $15\text{m}\Omega$)
- 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: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}$	-7	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$	-4.6	A
I_{DM}	Pulsed Drain Current ¹	-28	A
P_D	Power Dissipation- $T_A=25^\circ\text{C}$	2	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	62.5	$^\circ\text{C}/\text{W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DO2021AA	2021A.	SOT-23-3

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	-20	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V,V _{DS} =-20V	---	---	-1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 12V, V _{DS} =0A	---	---	± 100	μ A
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =-250 μ A	-0.4	-0.7	-1	V
R _{DS(ON)}	Drain-Source On-State Resistance ²	V _{GS} =-4.5V,I _D =-7A	---	15	20	m Ω
		V _{GS} =-2.5V,I _D =-5A	---	20	25	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	---	2000	---	pF
C _{OSS}	Output Capacitance		---	242	---	
C _{rSS}	Reverse Transfer Capacitance		---	231	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-10V, I _D =-7A V _{GEN} =-4.5V, R _G =2.5Ω	---	10	---	ns
t _r	Rise Time		---	31	---	ns
t _{d(off)}	Turn-Off Delay Time		---	28	---	ns
t _f	Fall Time		---	8	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-3A	---	15.3	---	nC
Q _{gs}	Gate-Source Charge		---	2.2	---	nC
Q _{gd}	Gate-Drain Charge		---	4.4	---	nC
Drain-Source Diode Characteristics						
I _S	VG=VD=0V		---	---	-7	A
V _{SD}	Diode forward voltage	I _S =-7A,V _{GS} =0V	---	-0.8	-1.2	V

Notes:

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

Typical Performance Characteristics

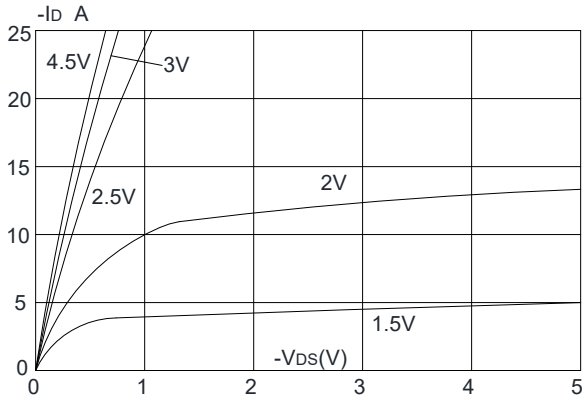


Figure1: Output Characteristics

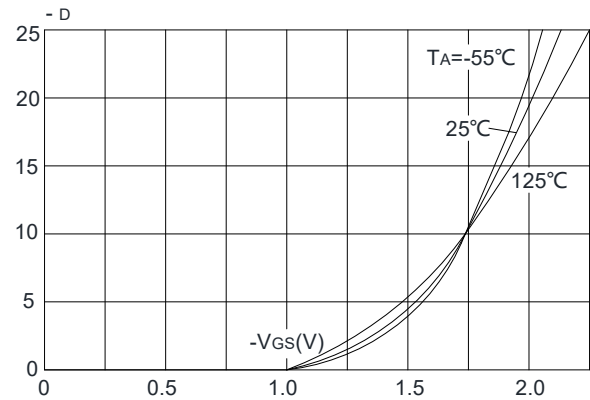


Figure 2: Typical Transfer Characteristics

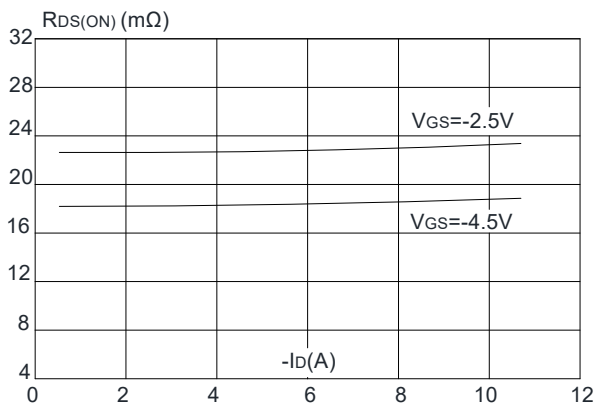


Figure 3: On-resistance vs. Drain Current

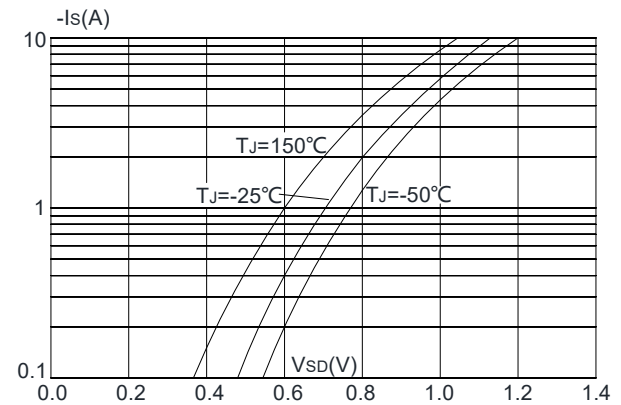


Figure 4: Body Diode Characteristics

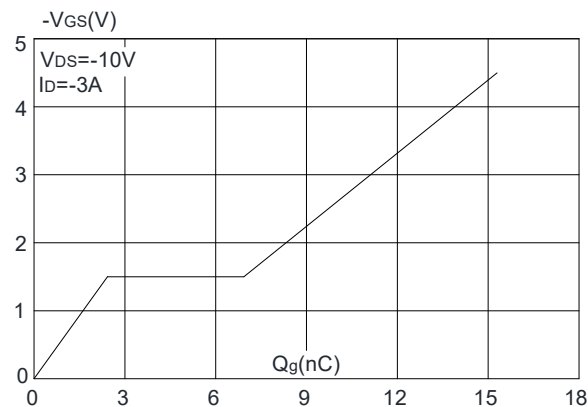


Figure 5: Gate Charge Characteristics

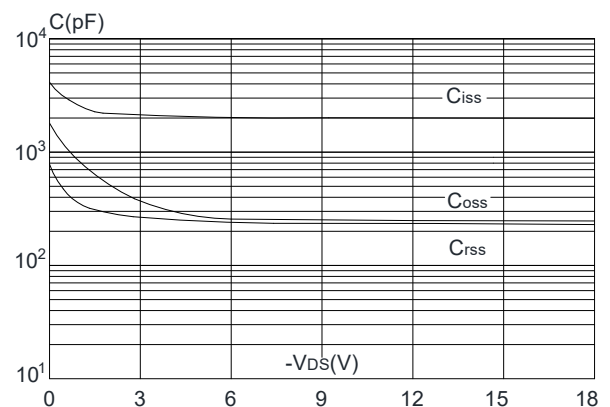


Figure 6: Capacitance Characteristics

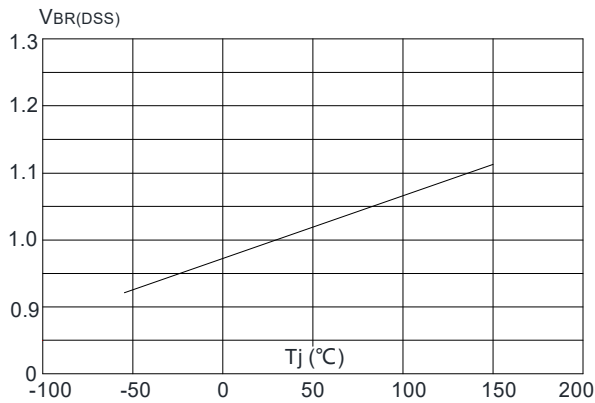


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

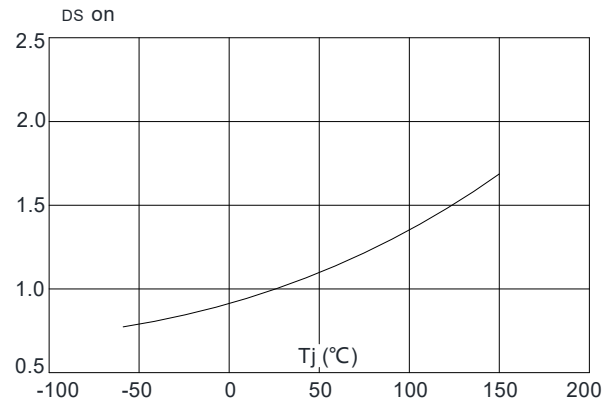


Figure 8: Normalized on Resistance vs. Junction Temperature

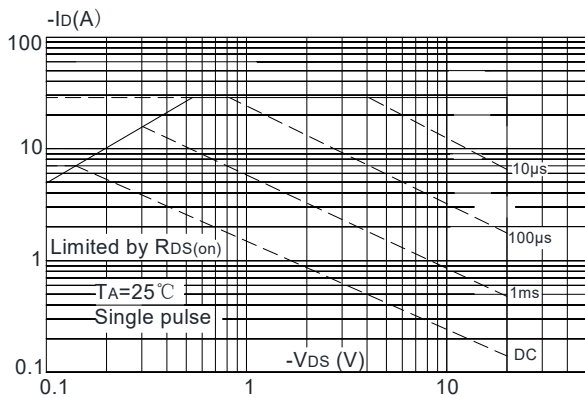


Figure 9: Maximum Safe Operating Area

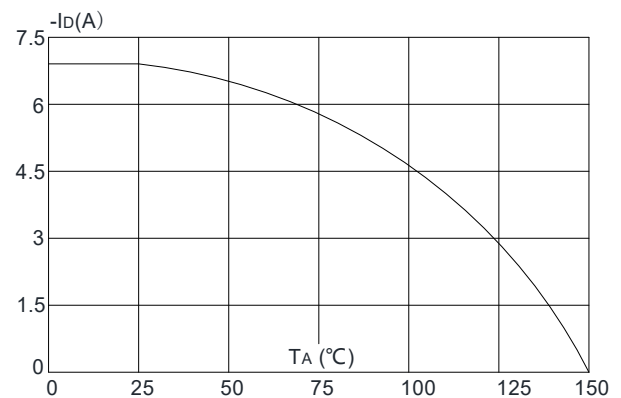


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

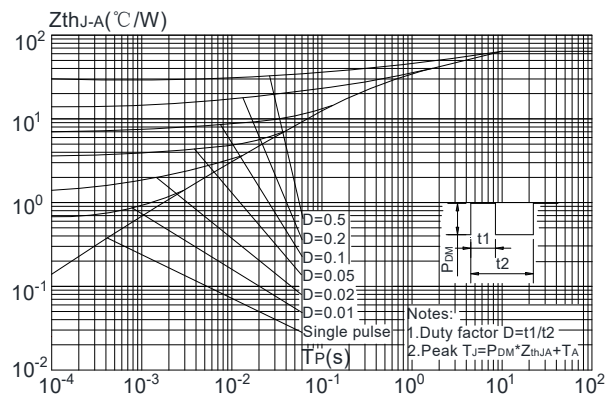


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient