

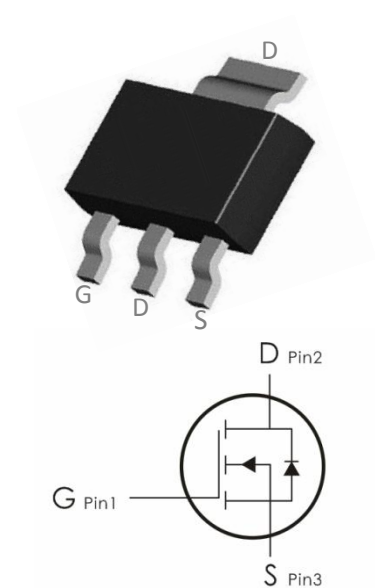
Description:

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) $V_{DS}=60V, I_D=6A, R_{DS(ON)} < 40m\Omega @ V_{GS}=10V$
- 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	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	6	A
	Continuous Drain Current- $T_C=70^\circ C$	4	A
I_{DM}	Drain Current-Pulsed (Note 1)	30	A
P_D	Power Dissipation	2.7	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	85	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	45	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOT6N06	6N06	SOT-223

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	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =80V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics (Note 3)						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.0	1.6	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =5A	---	30	40	m Ω
Dynamic Characteristics (Note 4)						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	1047	---	pF
C _{OSS}	Output Capacitance		---	55	---	
C _{rss}	Reverse Transfer Capacitance		---	43	---	
Switching Characteristics (Note 4)						
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, I _D =5A V _{GS} =10V, R _G =1.8Ω	---	7.5	---	ns
t _r	Rise Time		---	20	---	ns
t _{d(off)}	Turn-Off Delay Time		---	15	---	ns
t _f	Fall Time		---	24	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =2.5A	---	20.3	---	nC
Q _{gs}	Gate-Source Charge		---	3.7	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	5.3	----	nC
Drain-Source Diode Characteristics						
V _{SD}	Drain Diode Forward Voltage (Note 3)	V _{GS} =0V, I _S =5A	---	---	1.2	V
I _S	Diode Forward Current (Note 2)	VG=VD=0V,Force Current	---	---	5	A
I _{SM}	Pulsed Source Current		---	---	6	A

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$, $I_{AS}=8.7\text{A}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

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

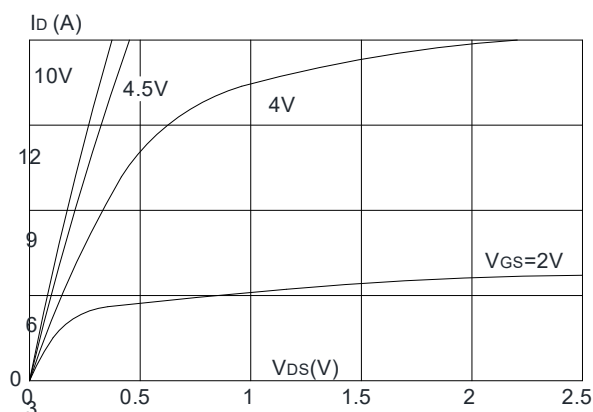


Figure 1: Output Characteristics

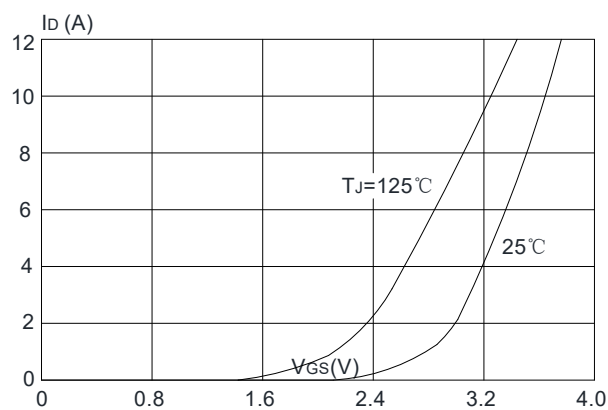


Figure 2: Typical Transfer Characteristics

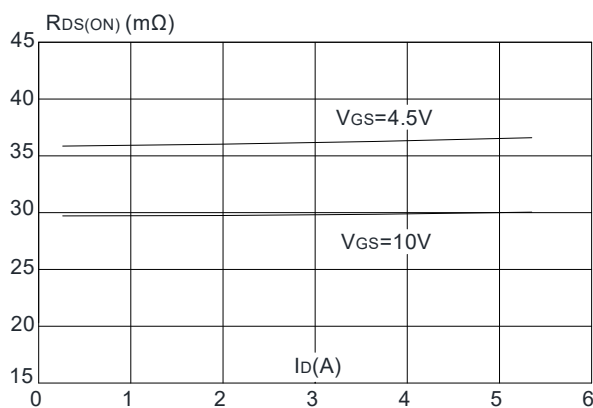


Figure 3: On-resistance vs. Drain Current

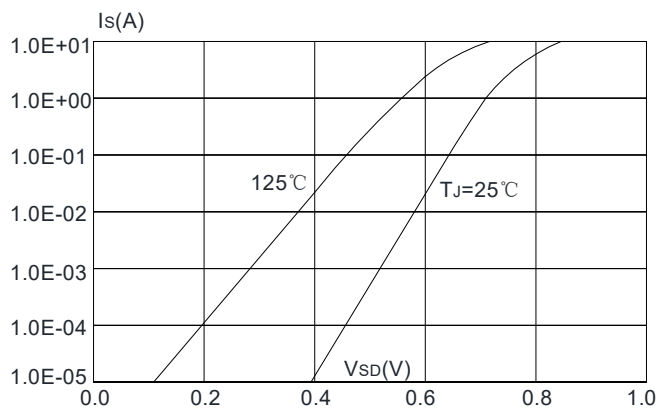


Figure 4: Body Diode Characteristics

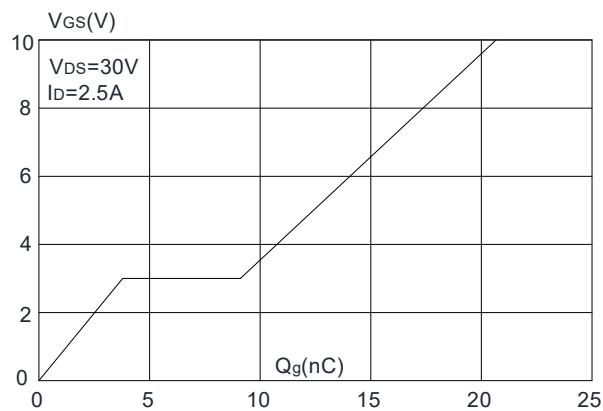


Figure 5: Gate Charge Characteristics

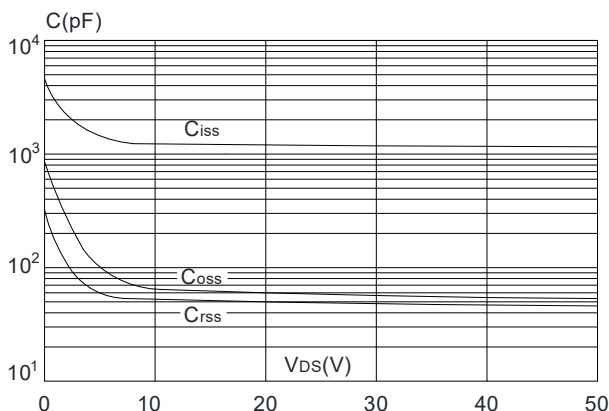


Figure 6: Capacitance Characteristics

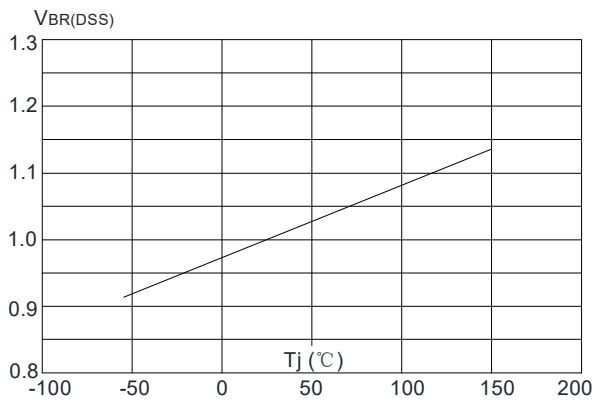


Figure 7: Normalized Breakdown Voltage vs.

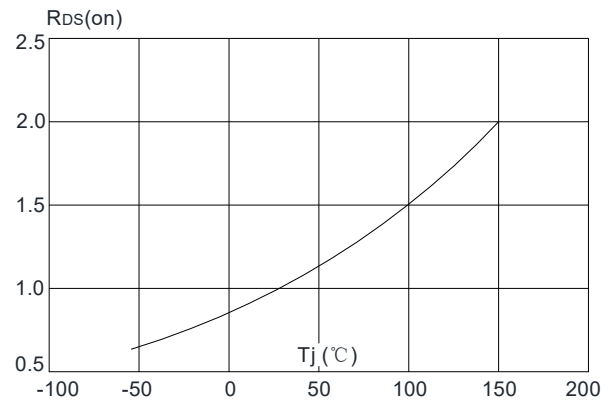


Figure 8: Normalized on Resistance vs. Junction Temperature

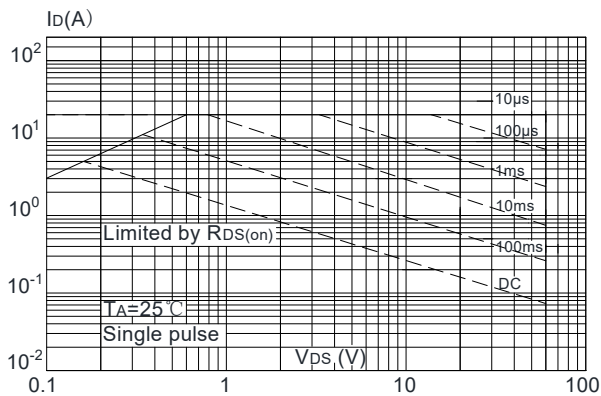


Figure 9: Maximum Safe Operating Area

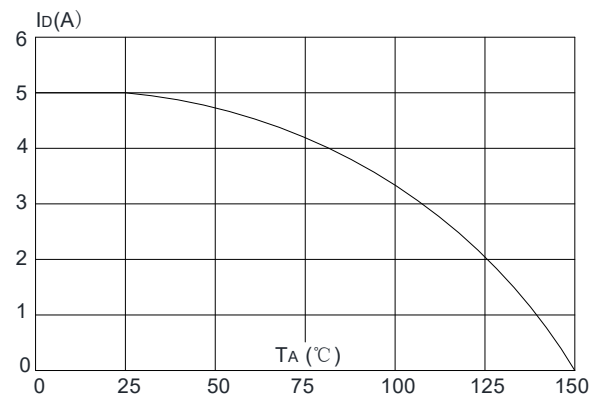


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

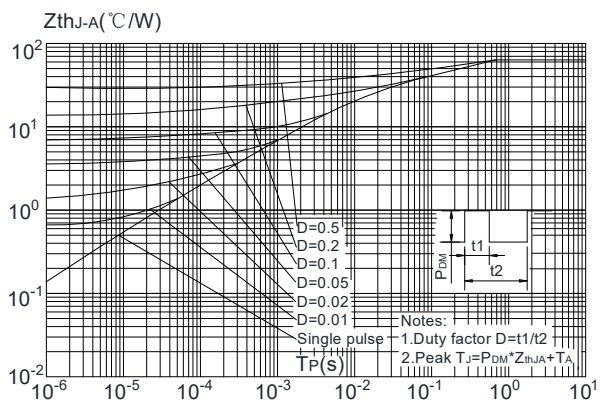


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient