

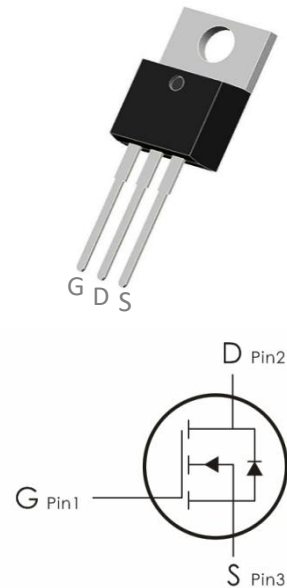
Description:

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) $V_{DS}=70V, I_D=70A, R_{DS(on)} < 8.5m\Omega @ V_{GS}=10V$
- 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: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	70	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	70	A
	Continuous Drain Current- $T_C=100^\circ C$	52	
I_{DM}	Pulsed Drain Current ^{note1}	320	
E_{AS}	Single Pulse Avalanche Energy ^{note2}	110	mJ
P_D	Power Dissipation	103	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+175	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.46	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOP70N07	70N07	TO-220

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	70		---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =70V	---	---	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	2	3	4	V
R _{DS(ON)}	Drain-Source On Resistance ^{note3}	V _{GS} =10V, I _D =30A	---	7.5	8.5	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	---	3900	---	pF
C _{oss}	Output Capacitance		---	260	--	
C _{rss}	Reverse Transfer Capacitance		---	240	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =30V, I _D =30A, R _{GEN} =3 Ω ,V _{GS} =10V	---	15	---	ns
t _r	Rise Time		---	90	---	ns
t _{d(off)}	Turn-Off Delay Time		---	45	---	ns
t _f	Fall Time		---	30	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =30A	---	35	---	nC
Q _{gs}	Gate-Source Charge		---	10	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	9	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =30A	---	---	1.2	V
I _S	Diode Forward Current	V _D =V _G =0V	---	---	70	A
I _{SM}	Plused Diode Forward Current	V _D =V _G =0V	---	---	320	A
T _{rr}	Reverse Recovery Time	I _F =20A, dI/dt=100A/us	---	78	---	NS
Q _{rr}	Reverse Recovery Charge	I _F =20A, dI/dt=100A/us	---	51	---	NC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $R_G=25\ \Omega$, $L=0.5\text{mH}$, $I_{AS}=21\text{A}$
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)

Figure1: Output Characteristics

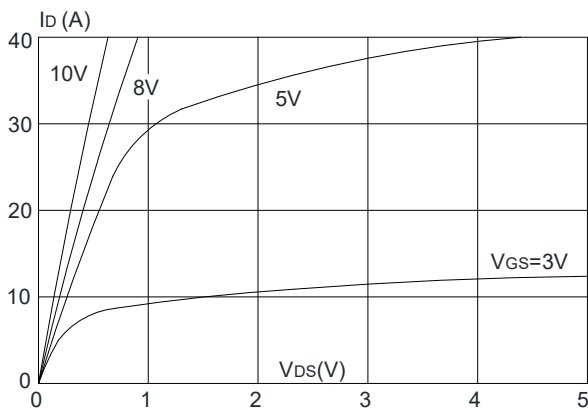


Figure 2: Typical Transfer Characteristics

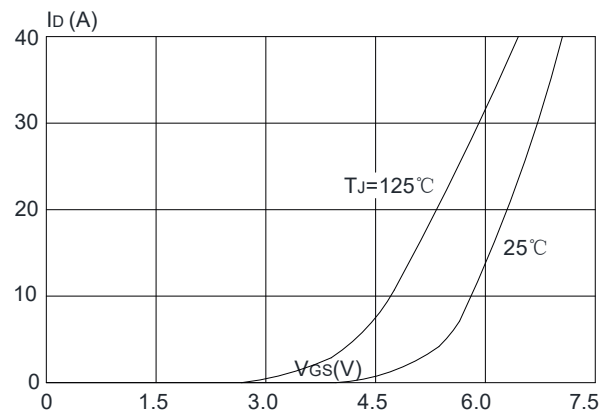


Figure 3: On-resistance vs. Drain Current

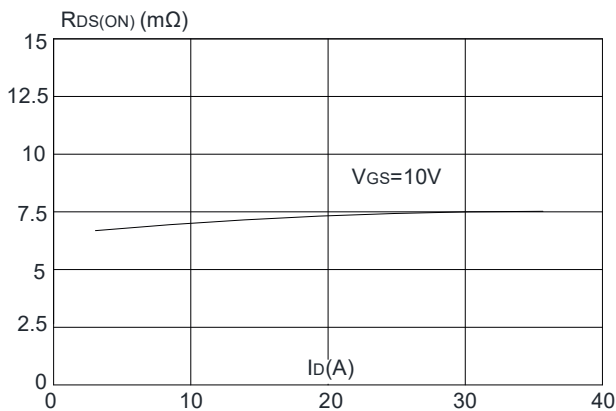


Figure 4: Body Diode Characteristics

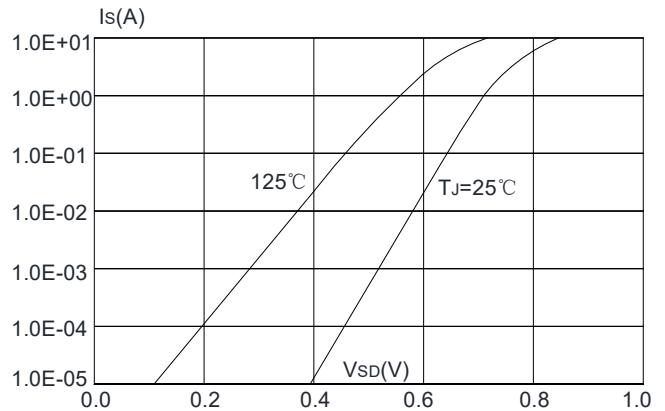


Figure 5: Gate Charge Characteristics

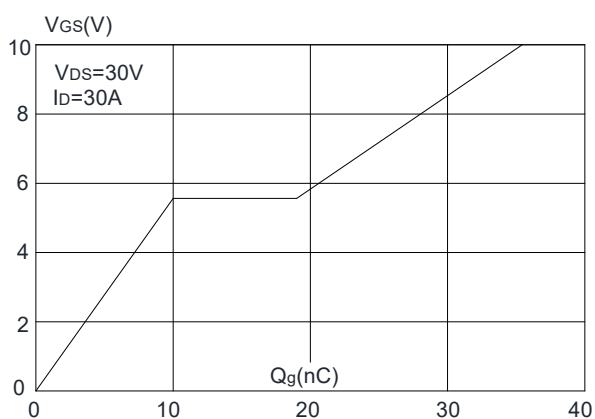


Figure 6: Capacitance Characteristics

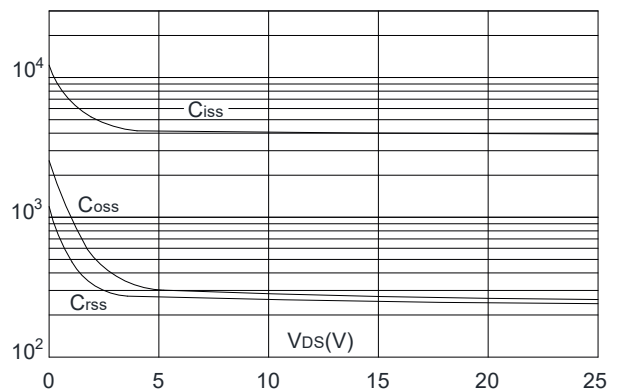


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

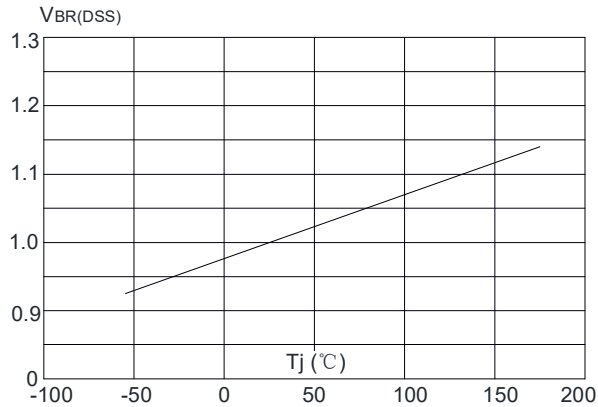


Figure 8: Normalized on Resistance vs. Junction Temperature

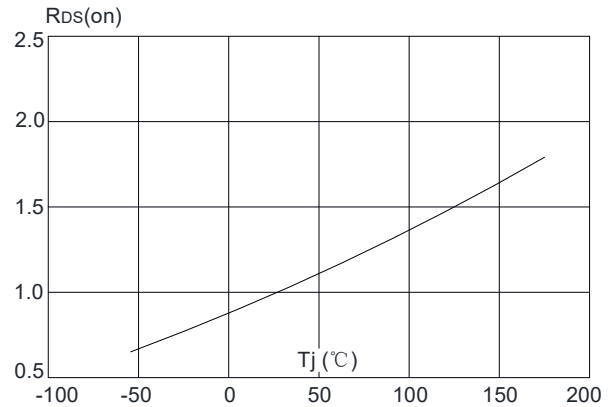


Figure 9: Maximum Safe Operating Area

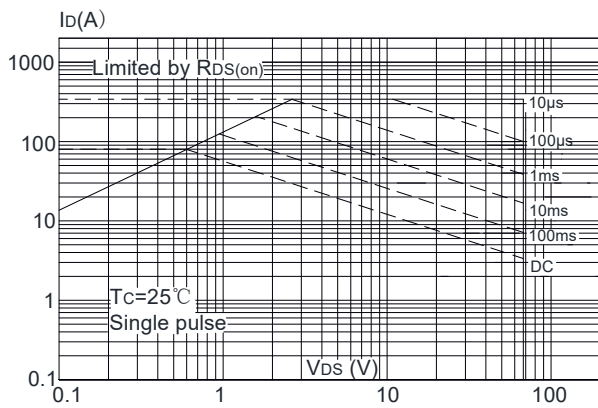


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

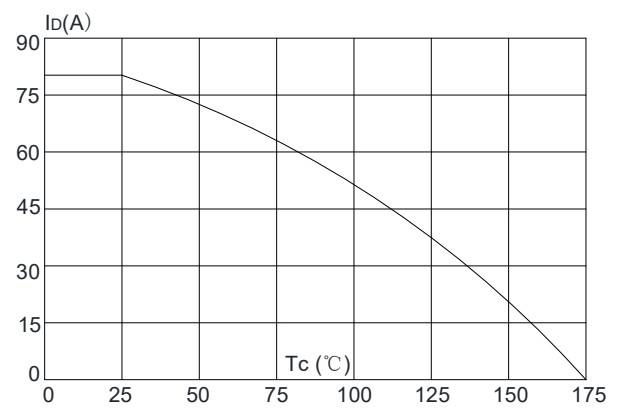


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

