

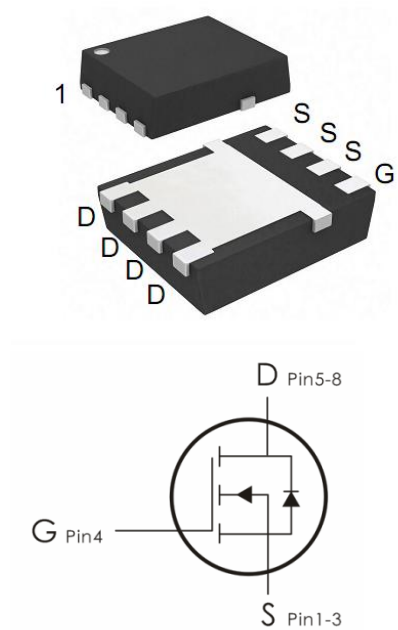
Description:

This N-Channel MOSFET uses advanced SGT 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) $V_{DS}=60V, I_D=70A, R_{DS(on)} < 6m\Omega @ V_{GS}=10V$
- 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: ($T_C=25^\circ C$ 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- $T_C=25^\circ C^1$	70	A
I_{DM}	Pulsed Drain Current ²	210	
I_{sp}	Pulsed source current	210	A
E_{AS}	Single Pulse Avalanche Energy	66	mJ
P_D	Power Dissipation ³	87	W
I_S	Diode Forward Current	70	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.44	$^\circ C/W$

$R_{\theta JA}$	Thermal Resistance Junction to mbient ⁴	62	°C/W
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Package Marking and Ordering Information:

Part NO.	Marking	Package
DON70N06	70N06	DFN5*6

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	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =60V	---	---	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		2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =20A	---	4.7	6	m Ω
		V _{GS} =4.5V, I _D =10A	---	6.4	10	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	2136		pF
C _{OSS}	Output Capacitance		---	331.5		
C _{rss}	Reverse Transfer Capacitance		---	10.6		
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{GS} =10 V, V _{DS} =50 V, R _G =2 Ω, I _D =25 A	---	22.9		ns
t _r	Rise Time		---	6.5		ns
t _{d(off)}	Turn-Off Delay Time		---	45.7		ns
t _f	Fall Time		---	20.4		ns
Q _g	Total Gate Charge	I _D =25 A, V _{DS} =50 V, V _{GS} =10 V	---	30		nC
Q _{gs}	Gate-Source Charge		---	5.8		nC
Q _{gd}	Gate-Drain “Miller” Charge		---	6.1		nC
Drain-Source Diode Characteristics						

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---		1.3	V
t_{rr}	Continuous Source Current	$I_S=25A$, $di/dt=100A/\mu s$	---	50.3		ns
q_{rr}	Pulsed Source Current		---	45.1		nC

Notes:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_d is based on max. junction temperature, using junction-case thermal resistance.
- 4) $V_{DD}=30V$, $R_G=25\Omega$, $L=0.3mH$, starting $T_j=25^\circ C$.
- 5) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25^\circ C$.

■ Electrical Characteristics Diagrams

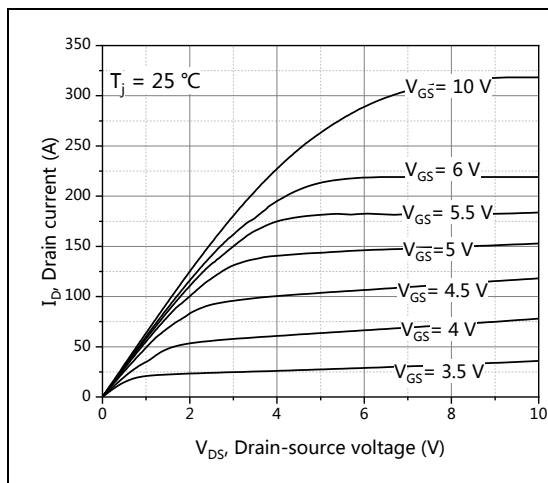


Figure 1, Typ. output characteristics

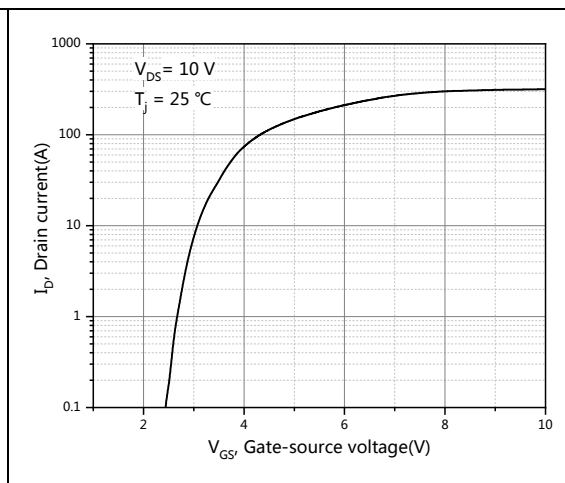


Figure 2, Typ. transfer characteristics

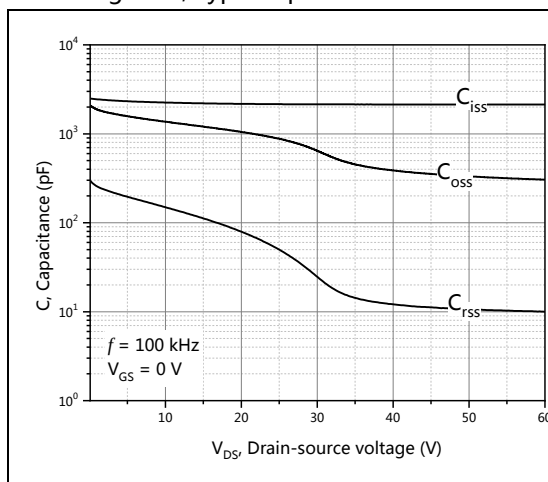


Figure 3, Typ. capacitances

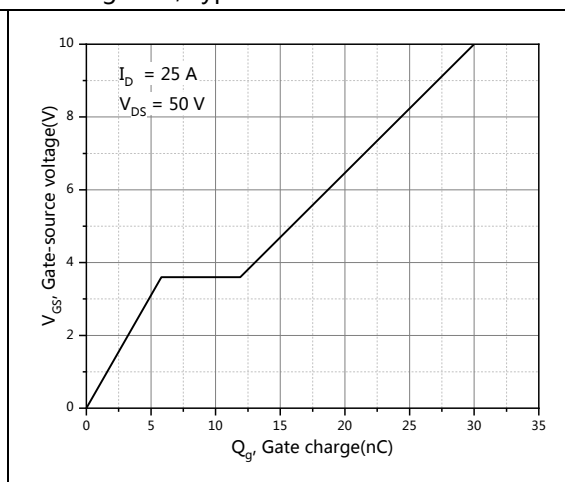


Figure 4, Typ. gate charge

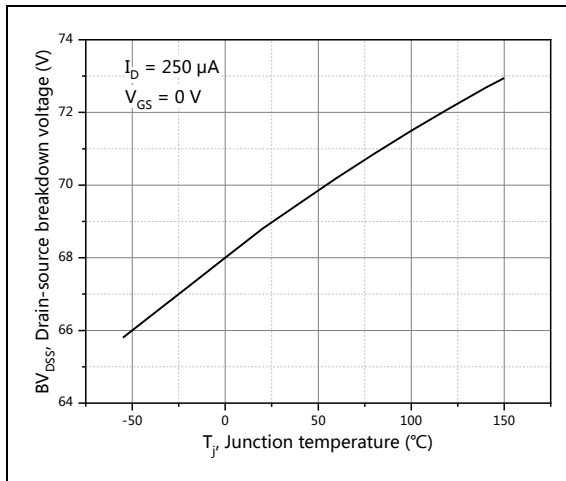


Figure 5, Drain-source breakdown voltage

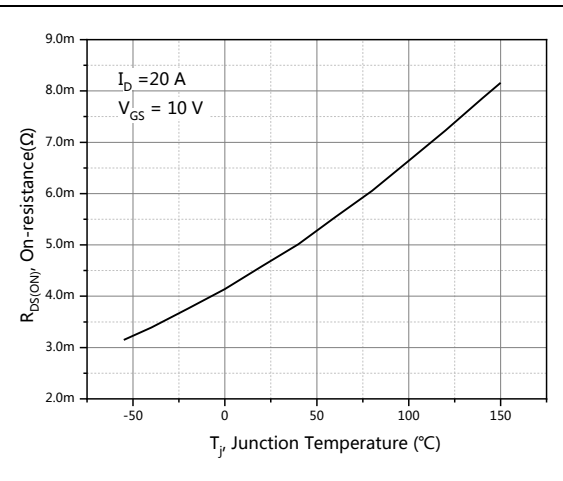


Figure 6, Drain-source on-state resistance

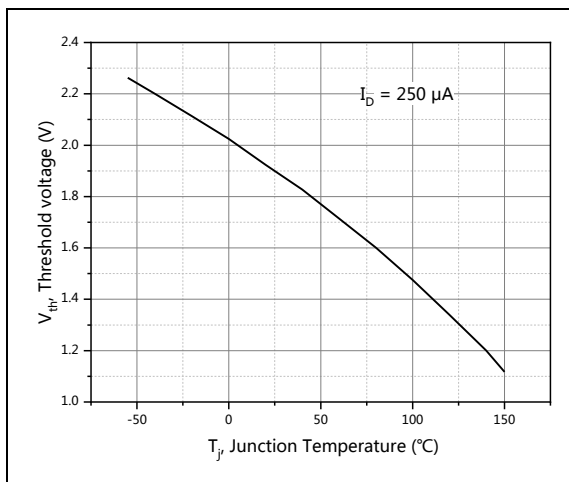


Figure 7, Threshold voltage

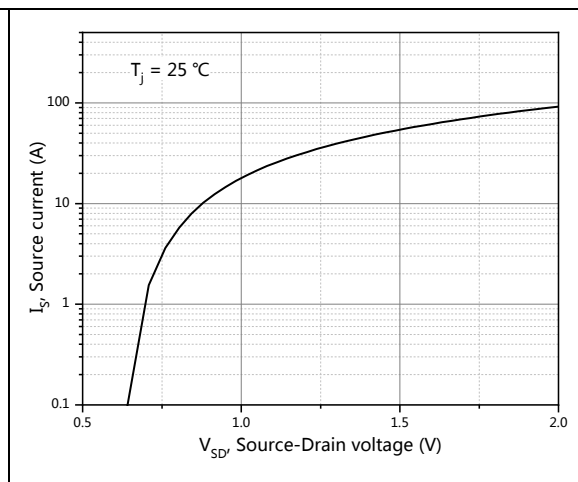


Figure 8, Forward characteristic of body diode

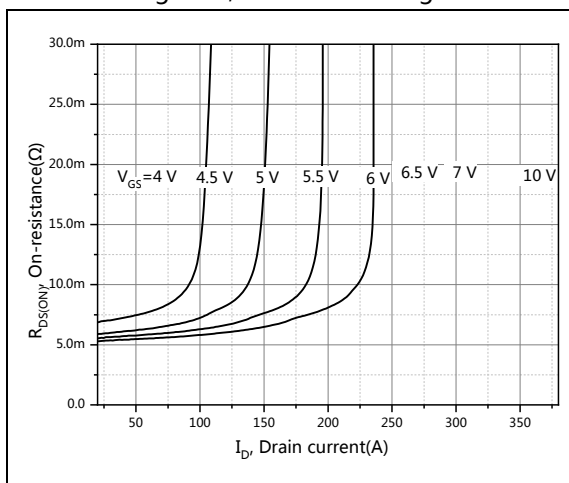


Figure 9, Drain-source on-state resistance

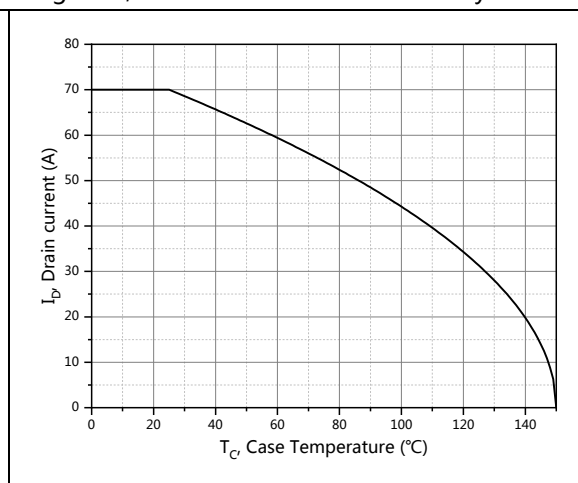


Figure 10, Drain current

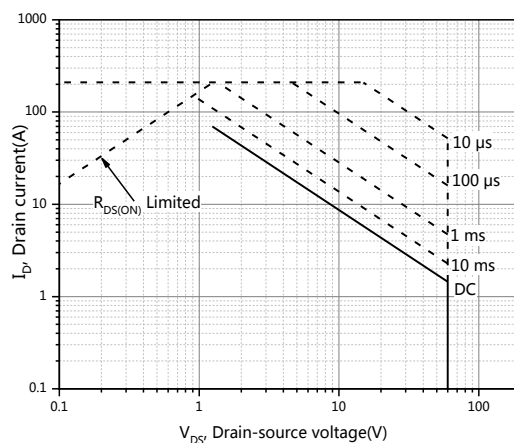


Figure 11, Safe operation area