

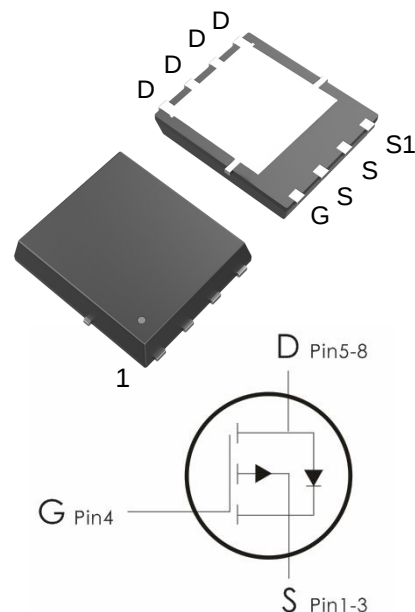
Description:

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) $V_{DS}=-60V, I_D=-30A, R_{DS(on)}<29m\Omega @V_{GS}=10V$
- 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	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^{\circ}C$	-30	A
	Continuous Drain Current- $T_C=100^{\circ}C$	-15.6	
I_{DM}	Pulsed Drain Current ¹	-96	
E_{AS}	Single Pulse Avalanche Energy ²	196	mJ
P_D	Power Dissipation	33.8	W
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	3.7	$^{\circ}C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DON30P06	30P06	DFN5*6-8

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ 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} =-0V	---	---	-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	-1.8	-2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =-10V, I _b =-15A	---	24	29	m Ω
		V _{GS} =-4.5V, I _D =10A	---	30.4	39	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	4025	---	pF
C _{OSS}	Output Capacitance		---	133	---	
C _{rSS}	Reverse Transfer Capacitance		---	97	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =-30V, R _{GEN} =3Ω, V _{GS} =-10V	---	11.2	---	ns
t _r	Rise Time		---	9	---	ns
t _{d(off)}	Turn-Off Delay Time		---	63	---	ns
t _f	Fall Time		---	13	---	ns
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-30V, I _D =-20A	---	67	---	nC
Q _{gs}	Gate-Source Charge		---	10.4	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	12	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{SD}	Source-Drain Diode Forward Voltage ³	V _{GS} =0V, I _S =-15A	---	---	-1.2	V

I_S	Maximum Continuous Drain to Source Diode Forward Current	V _D =V _G =0V	---	---	-30	A
I_{SM}	Pulsed Drain Current		---	---	-96	A
T_{rr}	Reverse Recovery Time	I _F =-20A, di/dt=500A/μs	---	26	---	ns
Q_{rr}	Reverse Recovery Charge		---	29	---	nc

Notes:

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.EAS condition: T_J=25℃, V_{DD}=40V, V_G=-10V, R_g=25Ω, L=0.5mH.
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Characteristics: (T_C=25℃ unless otherwise noted)

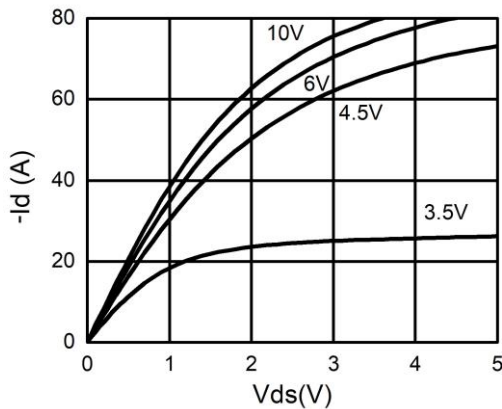


Figure 1. Output Characteristics

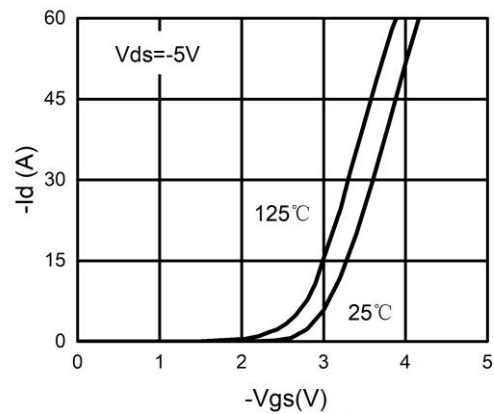


Figure 2. Transfer Characteristics

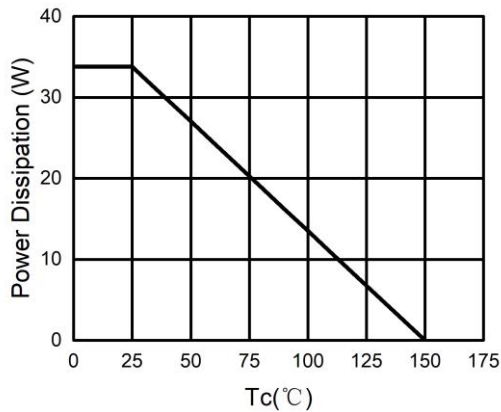


Figure 3. Power Dissipation

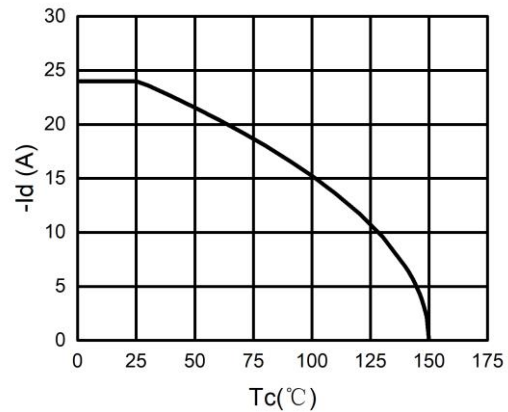


Figure 4. Drain Current

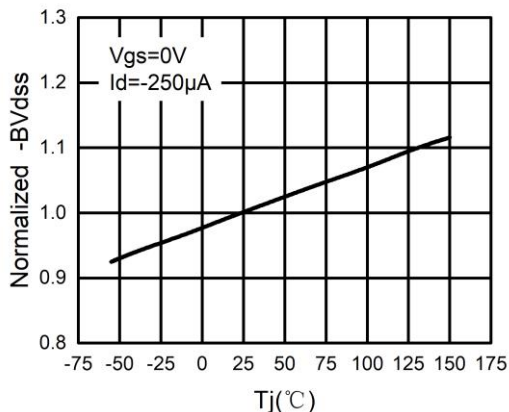


Figure 5. BV_{DSS} vs Junction Temperature

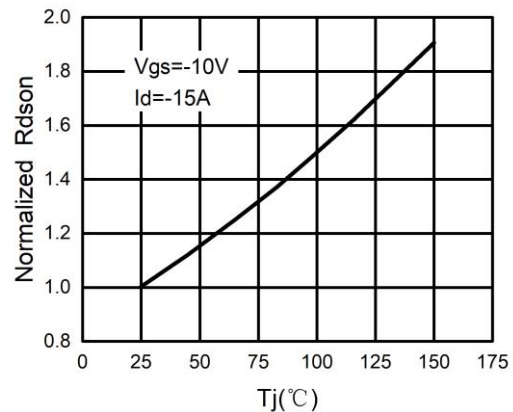


Figure 6. R_{DS(ON)} vs Junction Temperature

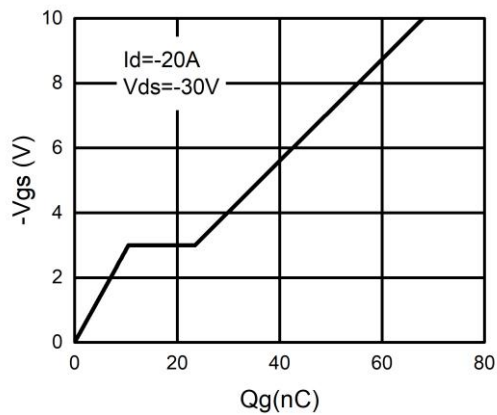


Figure 7. Gate Charge Waveforms

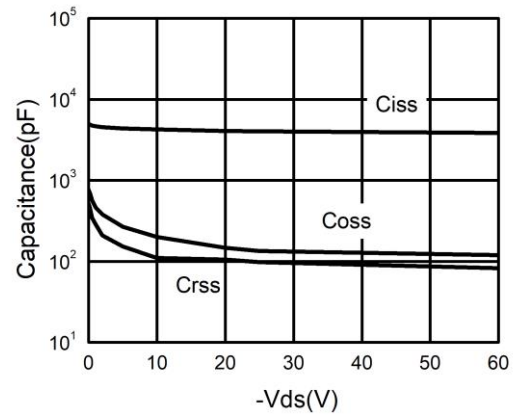


Figure 8. Capacitance

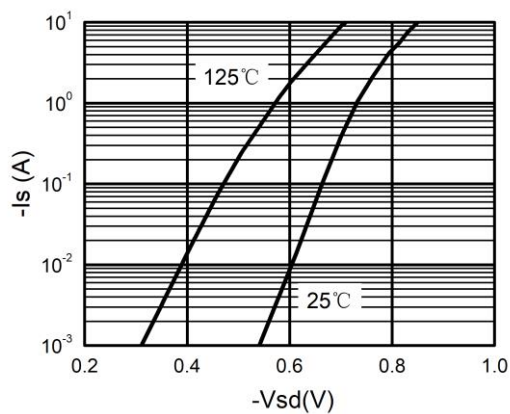


Figure 9. Body-Diode Characteristics

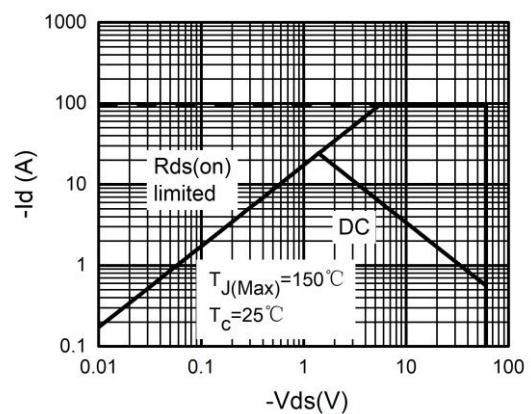


Figure 10. Maximum Safe Operating Area