

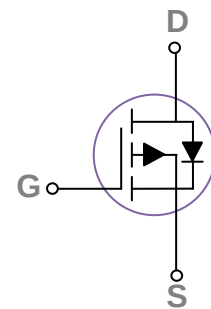
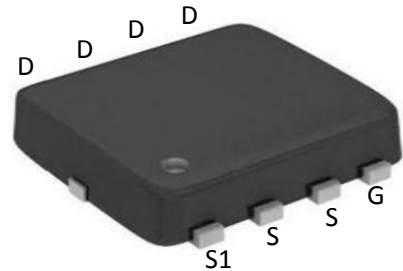
Description:

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) $V_{DS}=-30V, I_D=-35A, R_{DS(on)} < 18m\Omega @ V_{GS}=-10V$
- 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: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ\text{C}$	-35	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	-20	
I_{DM}	Pulsed Drain Current ²	-65	
E_{AS}	Single Pulse Avalanche Energy ³	72.2	mJ
I_{AS}	Avalanche Current	-38	A
P_D	Power Dissipation- $T_C=25^\circ\text{C}$ ⁴	29	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	4.32	$^\circ\text{C}/\text{W}$

R_{θJA}	Thermal Resistance,Junction to Ambient ¹	75	°C/W
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Package Marking and Ordering Information:

Part NO.	Marking	Package
ZC018PG	C018P	DFN3*3-8

Electrical Characteristics: (T_C=25°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	-30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-30V, T _J =25 °C	---	---	-1	μ A
		V _{GS} =0V, V _{DS} =-30V, T _J =55 °C	---	---	-5	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 25V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-1	-1.6	-2.5	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =-10V, I _D =-10A	---	11	14	m Ω
		V _{GS} =-4.5V, I _D =-5 A	---	17	24	
G _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-15A	---	19	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1970	---	pF
C _{oss}	Output Capacitance		---	250	---	
C _{rss}	Reverse Transfer Capacitance		---	230	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, I _D =-10A, R _{GEN} =2.5 Ω , V _{GS} =-10V	---	8	---	ns
t _r	Rise Time		---	12	---	ns
t _{d(off)}	Turn-Off Delay Time		---	45	---	ns
t _f	Fall Time		---	18	---	ns
Q _g	Total Gate Charge	V _{GS} =-5 V , V _{DS} =-15V,	---	20	---	nC
Q _{gs}	Gate-Source Charge	I _D =-10A	---	3	---	nC

Q_{gd}	Gate-Drain "Miller" Charge		---	5	---	nC
R_G	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	12	---	Ω
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V
I_S	Diode Forward Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	-15	A
I_{sm}	Pulsed Source Current ^{2,5}		---	---	-60	A
T_{rr}	Reverse Recovery Time	I _F =-2.8A, dI/dt=100A/μs , T _J =25°C	---	64	---	ns
Q_{rr}	Reverse Recovery Charge		---	25	---	nC

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-38A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics: (T_C=25°C unless otherwise noted)

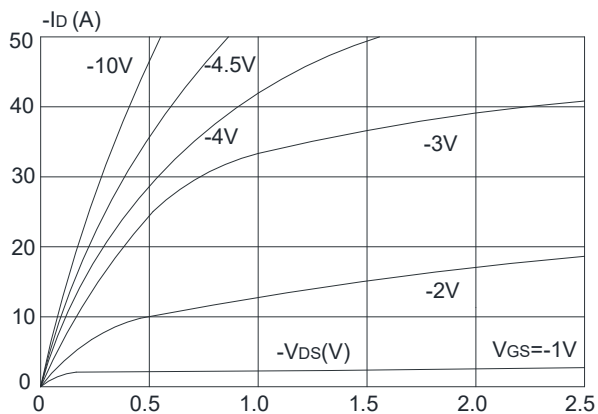


Figure 1: Output Characteristics

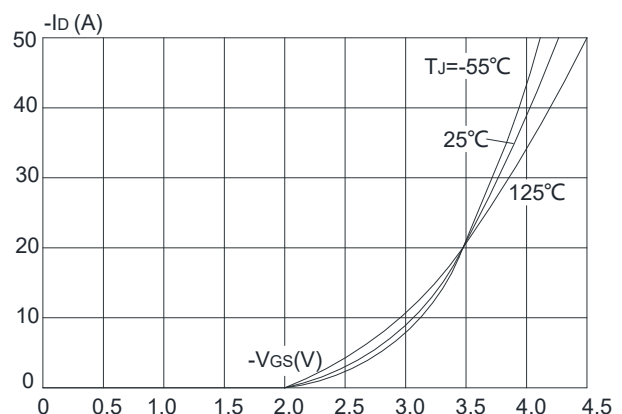


Figure 2: Typical Transfer Characteristics

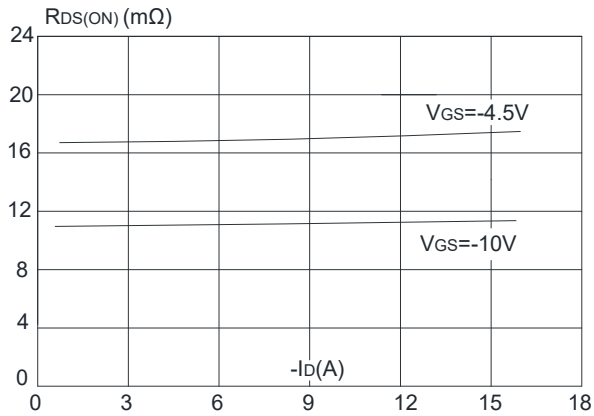


Figure 3: On-resistance vs. Drain Current

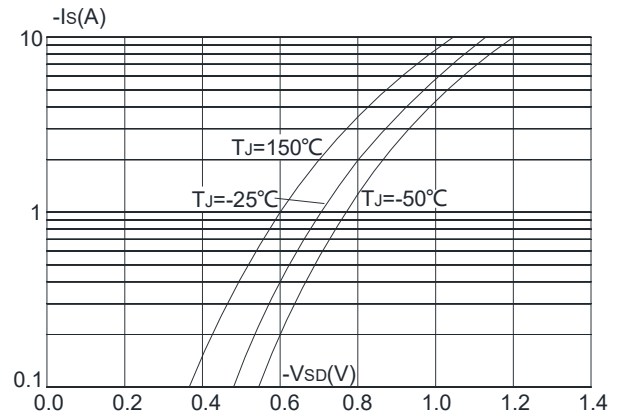


Figure 4: Body Diode Characteristics

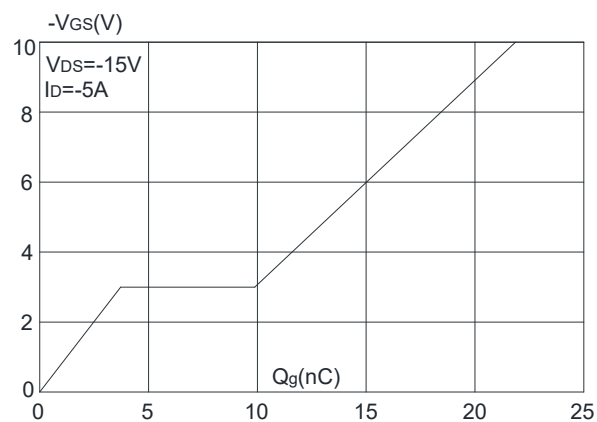


Figure 5: Gate Charge Characteristics

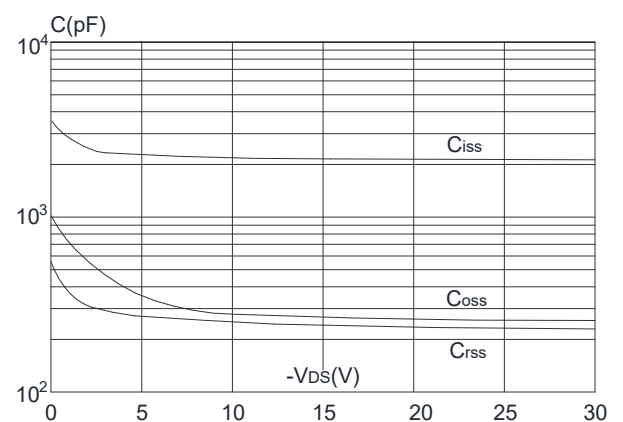


Figure 6: Capacitance Characteristics

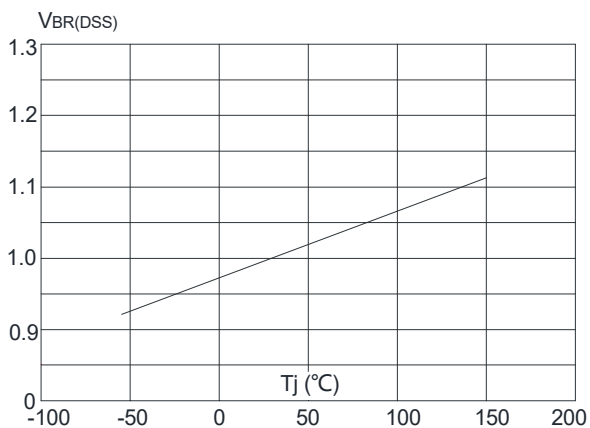


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

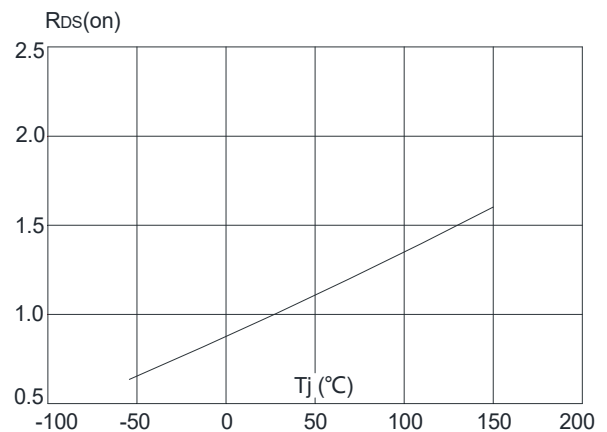


Figure 8: Normalized on Resistance vs. Junction Temperature

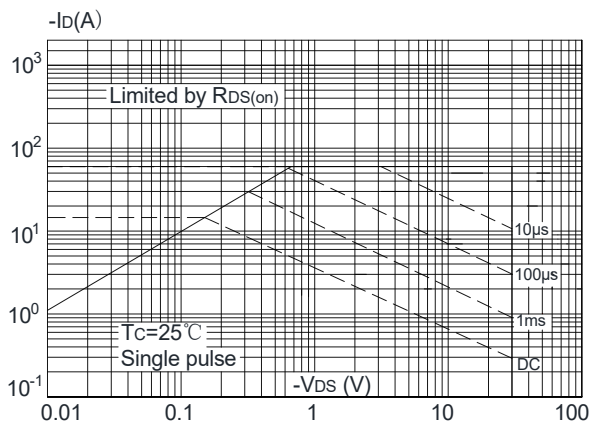


Figure 9: Maximum Safe Operating Area

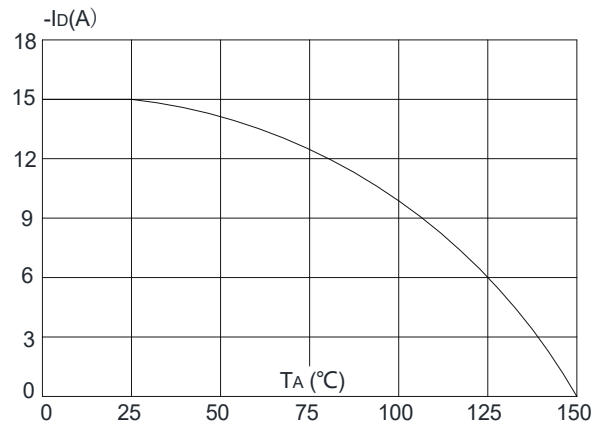


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

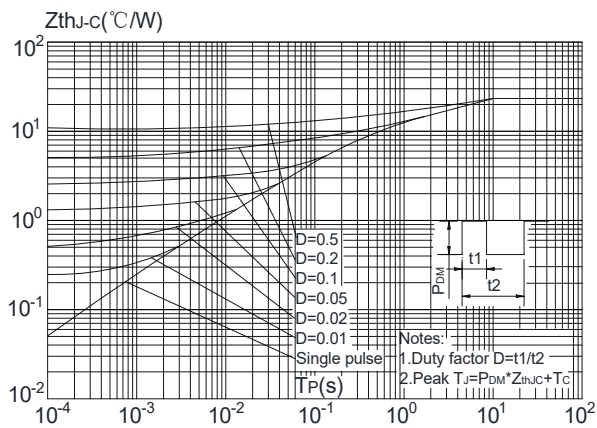


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case