



MCG16P03

P-Channel Power MOSFET

Features

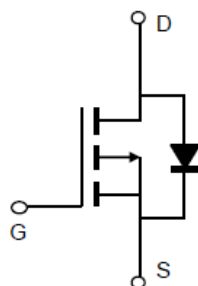
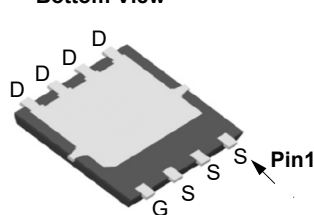
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

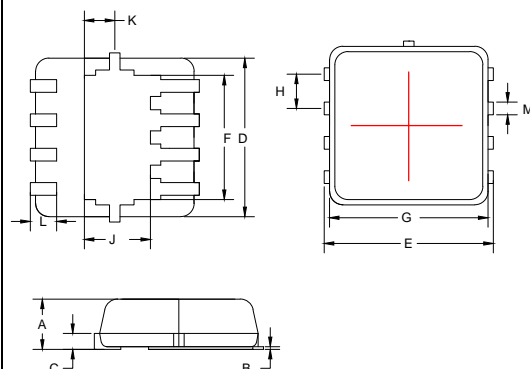
Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	-30	V
I_D	Drain Current-Continuous	$T_C = 25^\circ\text{C}$	A
		$T_C = 100^\circ\text{C}$	
I_{DM}	Pulsed Drain Current (Note 1)	-80	A
V_{GS}	Gate-source Voltage	± 20	V
P_D	Maximum Power Dissipation	35	W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Note 2)	3.57	$^\circ\text{C/W}$
E_{AS}	Single pulse avalanche energy (Note 5)	90	mJ
T_J	Operating Junction Temperature	-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to +150	$^\circ\text{C}$

EQUIVALENT CIRCUIT

Bottom View



DFN3030



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.028	0.035	0.70	0.90	
B	0.000	0.002	0.00	0.05	
C	0.004	0.010	0.10	0.25	
D	0.118 BSC		3.00 BSC		
E	0.126 BSC		3.20 BSC		
F	0.093 BSC		2.35 BSC		
G	0.118 BSC		3.00 BSC		
H	0.026 BSC		0.65 BSC		
J	0.069 BSC		1.75 BSC		
K	0.023 BSC		0.575 BSC		
L	0.012	0.020	0.30	0.50	
M	0.009	0.014	0.24	0.35	

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-30	-33	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.5	-1.9	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-15A	-	10.6	15	mΩ
		V _{GS} =-4.5V, I _D =-15A	-	16.3	25	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-15A	15	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{ISS}	V _{DS} =-25V, V _{GS} =0V, F=1.0MHz	-	2130	-	PF
Output Capacitance	C _{OSS}		-	302	-	PF
Reverse Transfer Capacitance	C _{RSS}		-	227	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V, I _D =-15A, V _{GS} =-10V, R _{GEN} =1Ω	-	12	-	nS
Turn-on Rise Time	t _r		-	10	-	nS
Turn-Off Delay Time	t _{d(off)}		-	25	-	nS
Turn-Off Fall Time	t _f		-	13	-	nS
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-20A, V _{GS} =-10V	-	45.6	-	nC
Gate-Source Charge	Q _{gs}		-	4.6	-	nC
Gate-Drain Charge	Q _{gd}		-	11.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =-30A	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition: T_J=25°C, V_{DD}=-15V, V_G=-4.5V, L=0.5mH, R_g=25 Ω

Typical Electrical and Thermal Characteristics

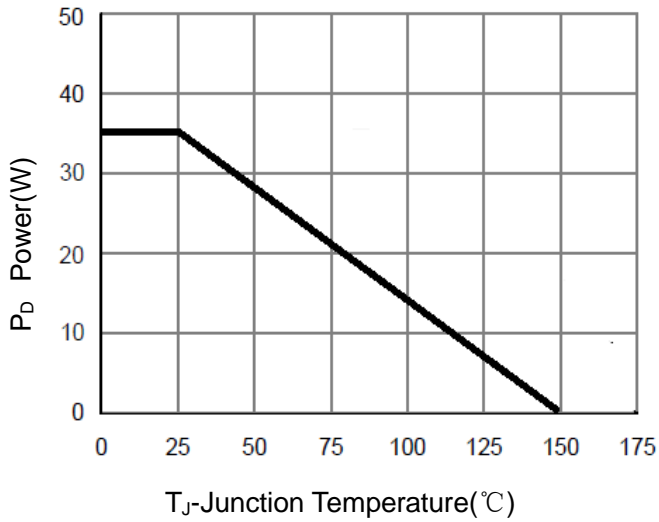


Figure 1 Power Dissipation

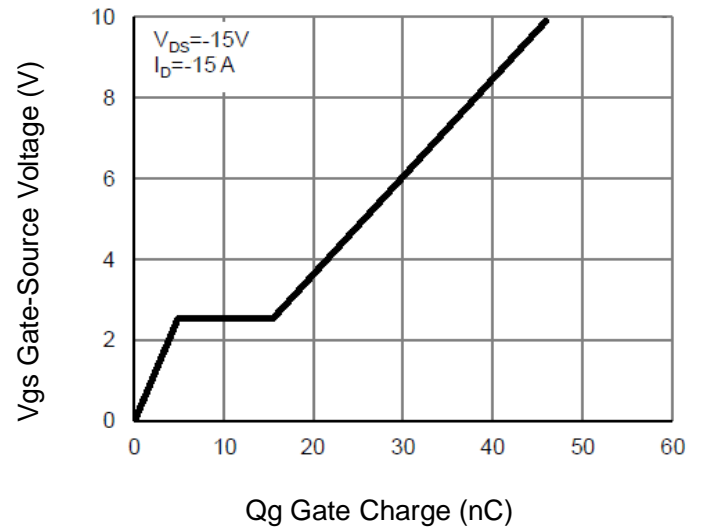


Figure 2 Gate Charge

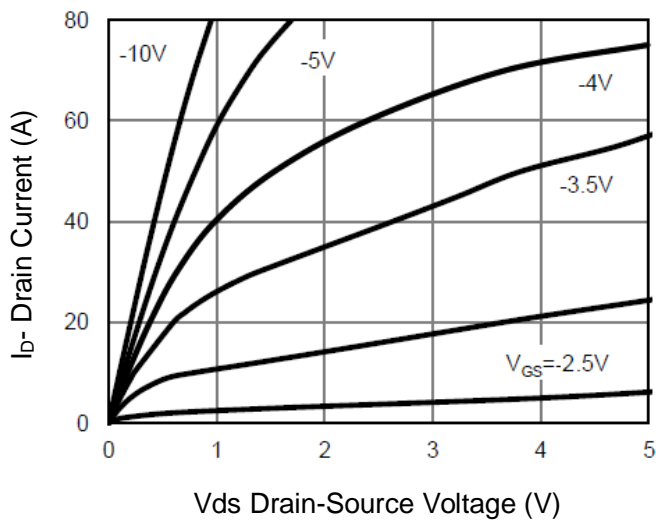


Figure 3 Output Characteristics

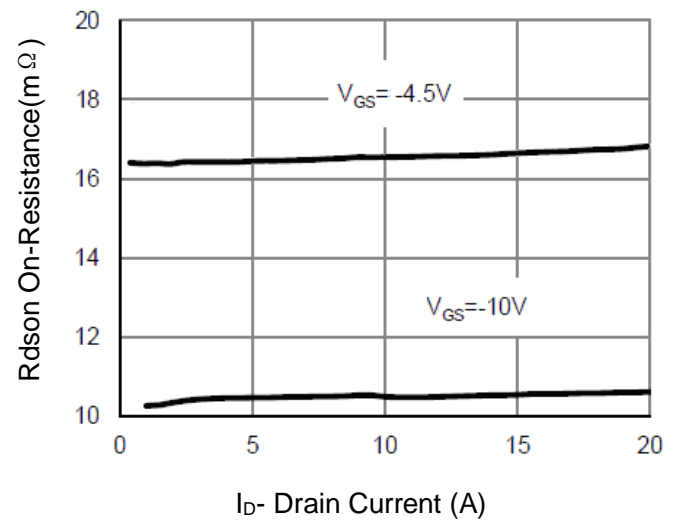


Figure 4 Drain-Source On-Resistance

Typical Electrical and Thermal Characteristics

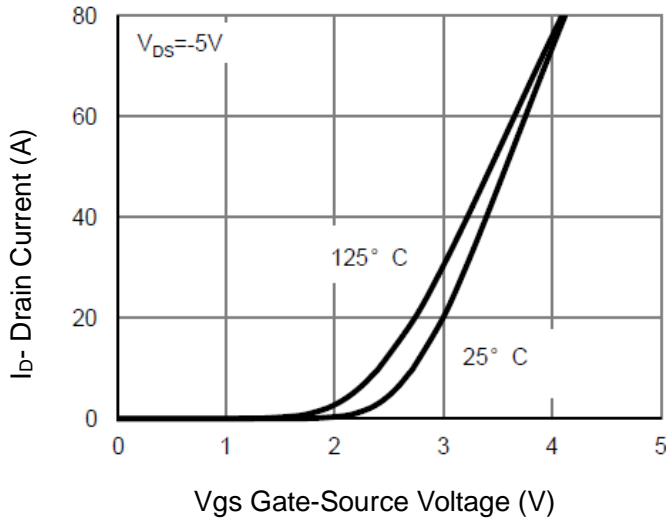


Figure 5 Transfer Characteristics

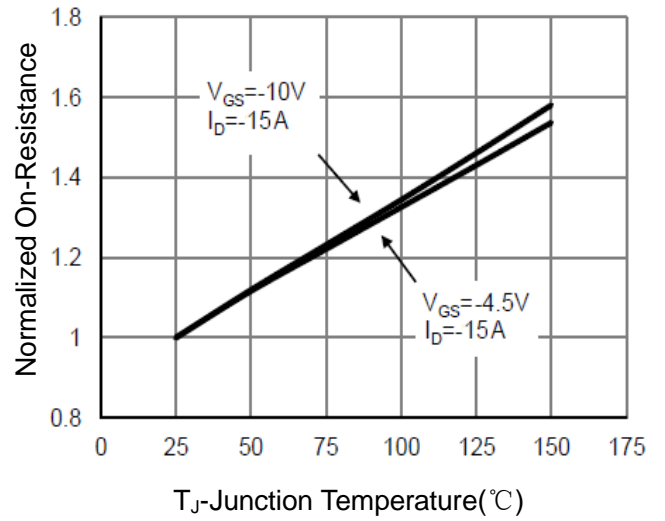


Figure 6 Drain-Source On-Resistance

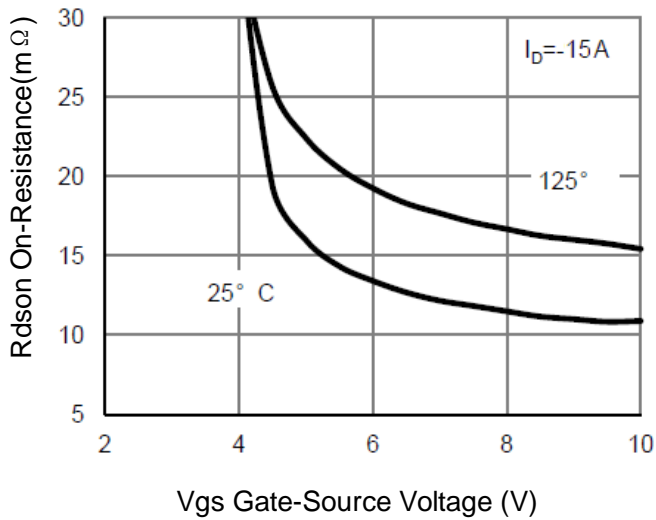


Figure 7 $R_{DS(on)}$ vs V_{GS}

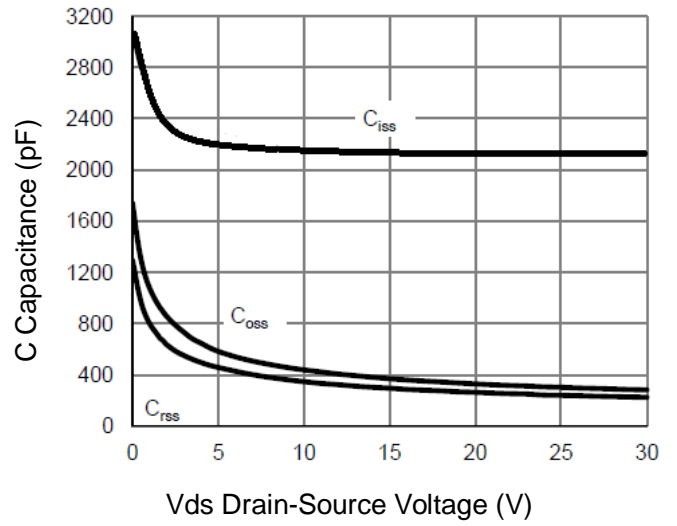


Figure 8 Capacitance vs V_{DS}



Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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