

# DP3407Q

## DP3407Q P-Channel Enhancement Mode Field Effect Transistor

### General description

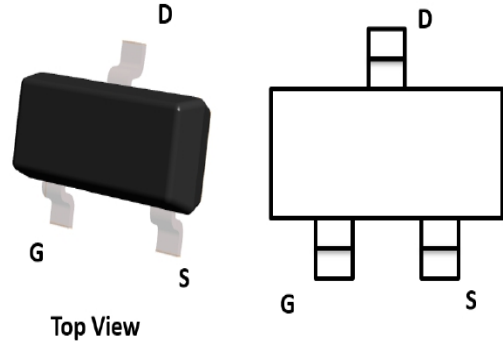
P-Channel Enhancement Mode Field Effect Transistor

### Features:

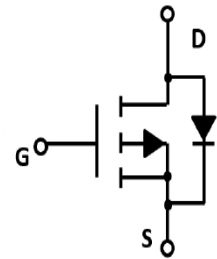
- $V_{DS}$  (V) = -30V
- $I_D$  = -4.1 A
- $R_{DS(ON)} < 60m\Omega$  ( $V_{GS} = -10V$ )
- $R_{DS(ON)} < 90m\Omega$  ( $V_{GS} = -4.5V$ )
- Trench Power LV MOSFET technology
- High density cell design for Low RDS(ON)
- High Speed switching
- Battery protection
- Load switch
- Power management

### Device Marking:

Device Type	Marking	Shipping
DP3407Q	A7**	3,000/Reel



SOT-23-3L



### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	-30	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$T_A = 25^\circ\text{C}$ @ Steady State	-4.1	A
	$T_A = 70^\circ\text{C}$ @ Steady State	-3.2	
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-15	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	1.5	W
Thermal Resistance Junction-to-Ambient @ Steady State <sup>B</sup>	$R_{\theta JA}$	82	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 ~ +150	$^\circ\text{C}$

## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =-250μA	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C			-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0	-1.6	-2.4	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> =-4.1A		40	60	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-3.5A		55	90	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-4.1A, V <sub>GS</sub> =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-4.1	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHZ		580		pF
Output Capacitance	C <sub>oss</sub>			98		
Reverse Transfer Capacitance	C <sub>rss</sub>			74		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-4.1A		6.8		nC
Gate Source Charge	Q <sub>gs</sub>			1.0		
Gate Drain Charge	Q <sub>gd</sub>			1.4		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-10V, V <sub>DD</sub> =-15V, R <sub>L</sub> =15 Ω, I <sub>D</sub> =-1A, R <sub>GEN</sub> =2.5Ω		14		ns
Turn-on Rise Time	t <sub>r</sub>			61		
Turn-off Delay Time	t <sub>D(off)</sub>			19		
Turn-off Fall Time	t <sub>f</sub>			10		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

## Typical Performance Characteristics

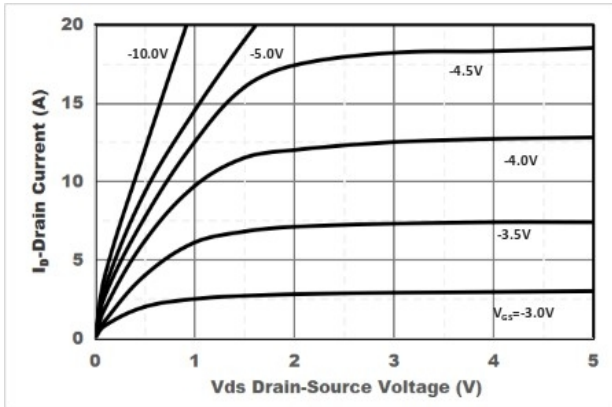


Figure1. Output Characteristics

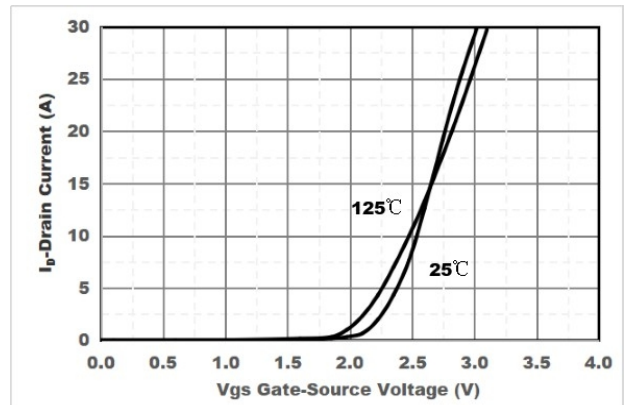


Figure2. Transfer Characteristics

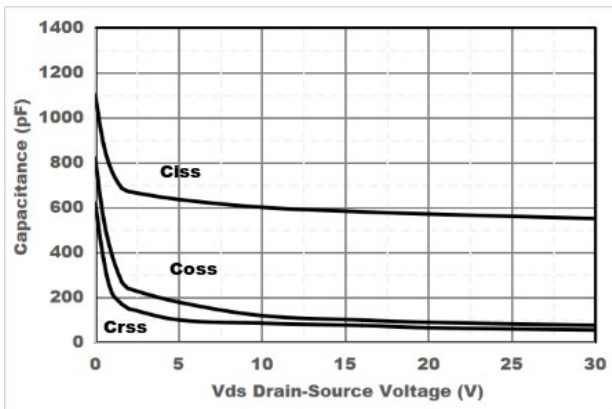


Figure3. Capacitance Characteristics

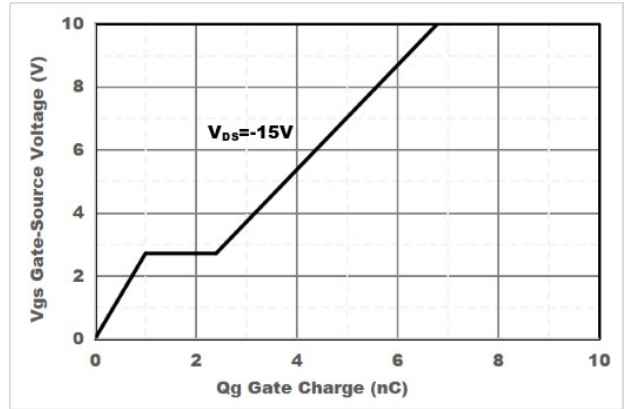


Figure4. Gate Charge

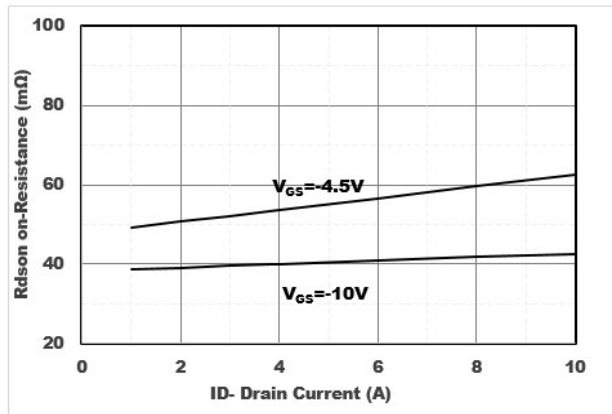


Figure5. Drain-Source on Resistance

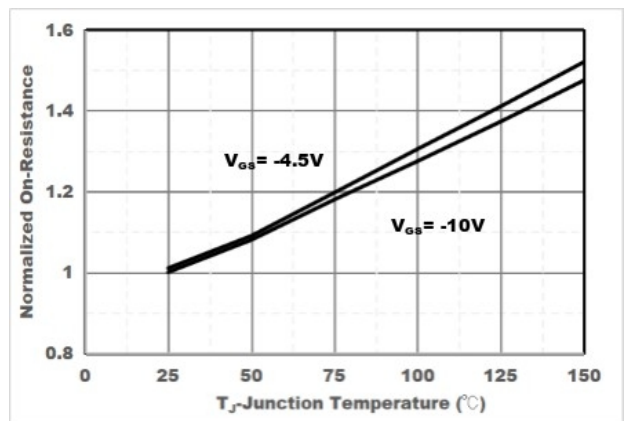


Figure6. Drain-Source on Resistance

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