



Micro Commercial Components

Micro Commercial Components  
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# MCQ4407

## P -Channel Enhancement Mode Field Effect Transistor

### Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/Rohs Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking: Q4407

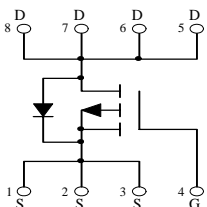
### Maximum ratings ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-12	A
Pulsed Drain Current	$I_{DM}$	-48	A
Single Pulsed Avalanche Energy <sup>(1)</sup>	$E_{AS}$	115	mJ
Power Dissipation	$P_D$	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$
Operating Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	

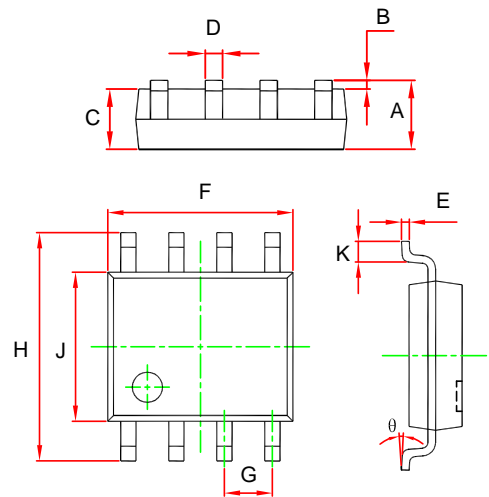
### Notes :

(1).  $E_{AS}$  condition:  $V_{DD}=-50\text{V}$ ,  $L=0.5\text{mH}$ ,  $R_G=25\Omega$ , Starting  $T_J = 25^{\circ}\text{C}$

### Equivalent Circuit



### SOP-8



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K	0.016	0.050	0.400	1.270	
$\theta$	0 $^{\circ}$	8 $^{\circ}$	0 $^{\circ}$	8 $^{\circ}$	

**Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)**

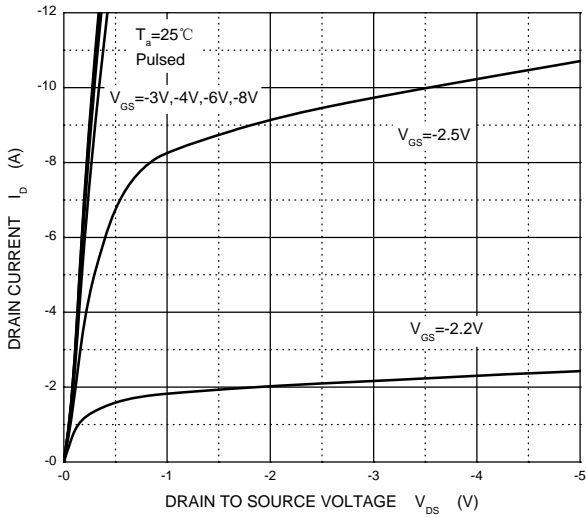
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
<b>On characteristics (note1)</b>						
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.0	-1.5	-2.2	V
Static drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -12A		7.8	13	mΩ
		V <sub>GS</sub> = -6.0V, I <sub>D</sub> = -10A		9	17	mΩ
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -15A	25			S
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1MHz		2900		pF
Output capacitance	C <sub>oss</sub>			410		
Reverse transfer capacitance	C <sub>rss</sub>			280		
<b>Switching characteristics (note 2)</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A		48		nC
Gate-source charge	Q <sub>gs</sub>			12		
Gate-drain charge	Q <sub>gd</sub>			14		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, V <sub>GS</sub> = -10V, R <sub>G</sub> = 3Ω, R <sub>L</sub> = 1.25Ω		15		ns
Turn-on rise time	t <sub>r</sub>			11		
Turn-off delay time	t <sub>d(off)</sub>			44		
Turn-off fall time	t <sub>f</sub>			21		
Gate Resistance	R <sub>g</sub>	f = 1MHz, V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V,			3.6	Ω
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage(note1)	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -2A			-1.2	V
Continuous drain-source diode forward current	I <sub>S</sub>				-15	A
Pulsed drain-source diode forward current	I <sub>SM</sub>				-60	A

Notes:

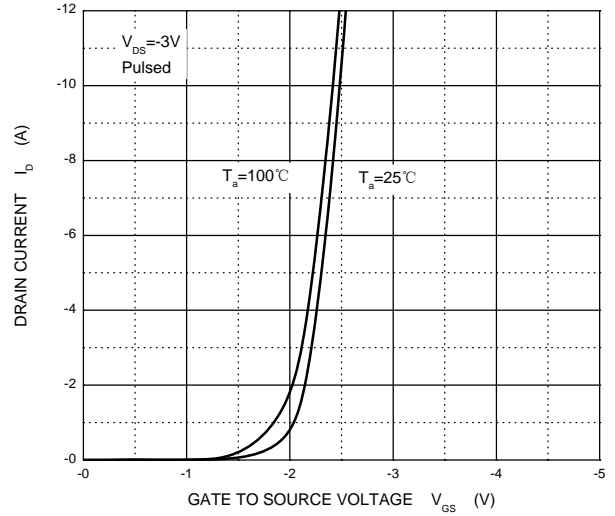
1. Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.

**Typical Characteristics**

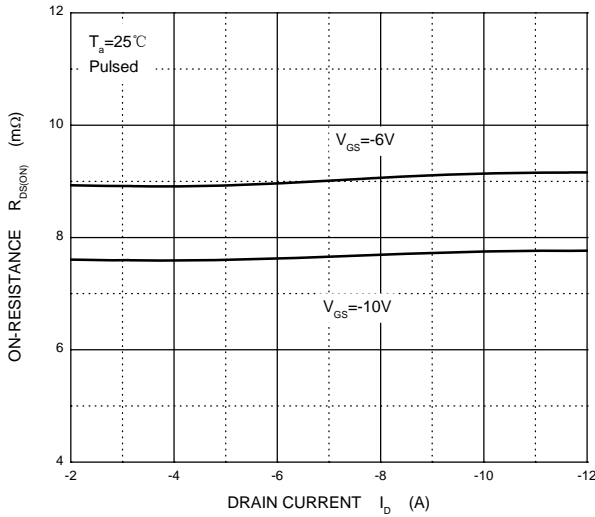
**Output Characteristics**



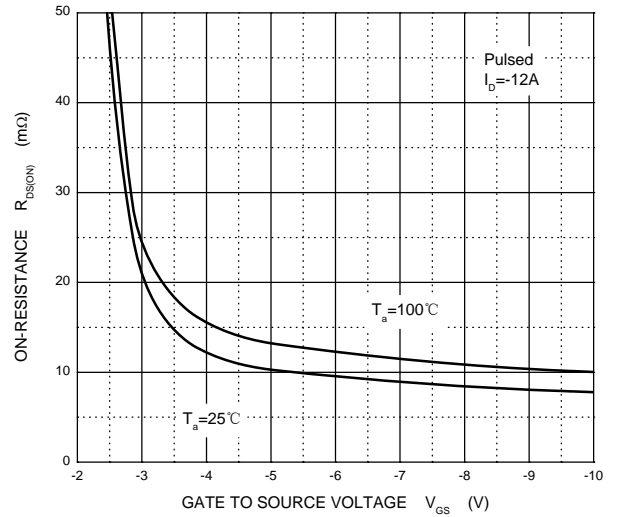
**Transfer Characteristics**



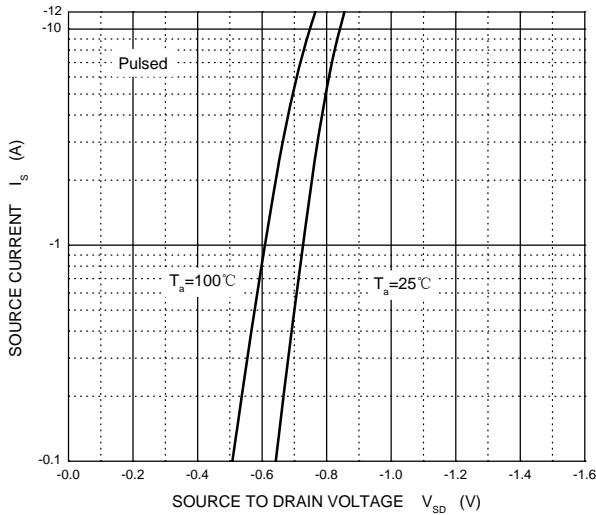
**$R_{DS(ON)}$  —  $I_D$**



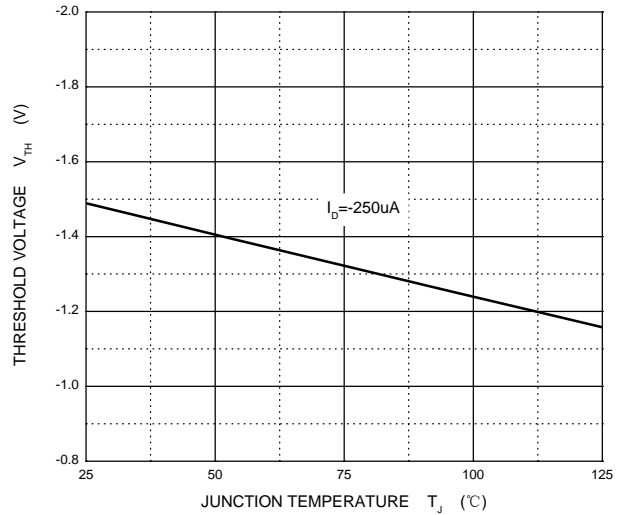
**$R_{DS(ON)}$  —  $V_{GS}$**



**$I_S$  —  $V_{SD}$**



**Threshold Voltage**





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### Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:4Kpcs/Reel

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

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