



Micro Commercial Components



Micro Commercial Components  
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# MCQ9435

## P-Channel Power MOSFET

### Features

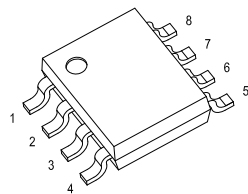
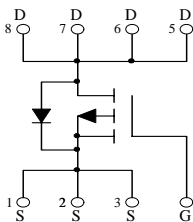
- Advanced trench MOSFET process technology
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking: Q9435

### Maximum Ratings @ 25°C Unless Otherwise Specified

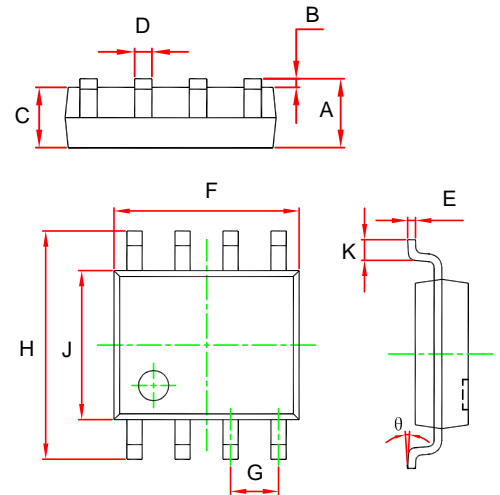
Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	-30	V
$I_D$	Drain Current-Continuous	-5.1	A
$I_{DM}$	Pulsed Drain Current	-20	A
$V_{GS}$	Gate-source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulsed Avalanche Energy <sup>(1)</sup>	20	mJ
$P_D$	Power Dissipation	1.4	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	89	°C/W
$T_J$	Operating Junction Temperature	-55 to +150	°C
$T_{STG}$	Storage Temperature	-55 to +150	°C

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

### 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°	8°	0°	8°	

**ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise specified)**

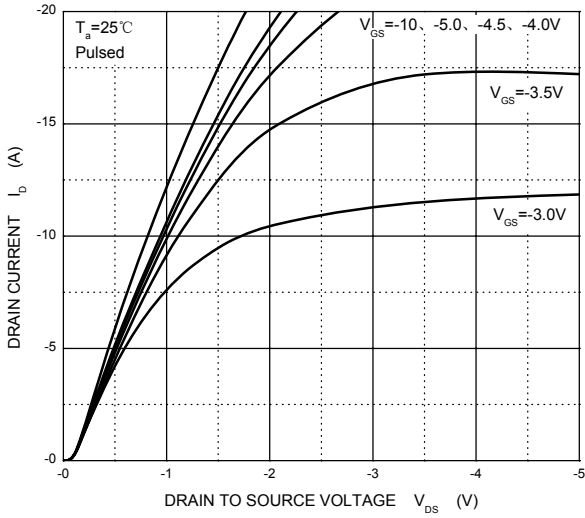
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage 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	-2.0	V
Static drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.6A		50	60	mΩ
		V <sub>GS</sub> = -6V, I <sub>D</sub> = -4.1A		60	70	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A		65	105	mΩ
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> = -15V, I <sub>D</sub> = -4.6A	5			S
<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> = -4.6A			40	nC
Gate-source charge	Q <sub>gs</sub>			4		
Gate-drain charge	Q <sub>gd</sub>			6.3		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, I <sub>D</sub> = -1A, V <sub>GS</sub> = -10V, R <sub>G</sub> = 6Ω, R <sub>L</sub> = 15Ω			30	ns
Turn-on rise time	t <sub>r</sub>				60	
Turn-off delay time	t <sub>d(off)</sub>				120	
Turn-off fall time	t <sub>f</sub>				100	
Gate Resistance	R <sub>g</sub>	f = 1MHz, V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V,		5.8		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> = -2.6A			-1.2	V
Continuous drain-source diode forward current	I <sub>S</sub>				-5.1	A
Pulsed drain-source diode forward current	I <sub>SM</sub>				-20	A

Notes:

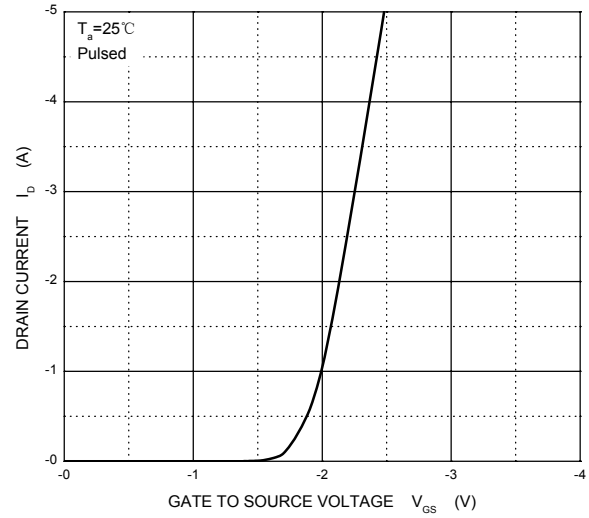
1. Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.

# Typical Characteristics

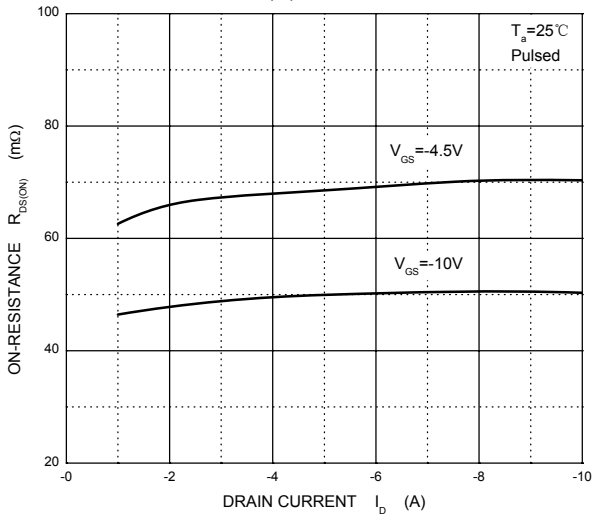
Output Characteristics



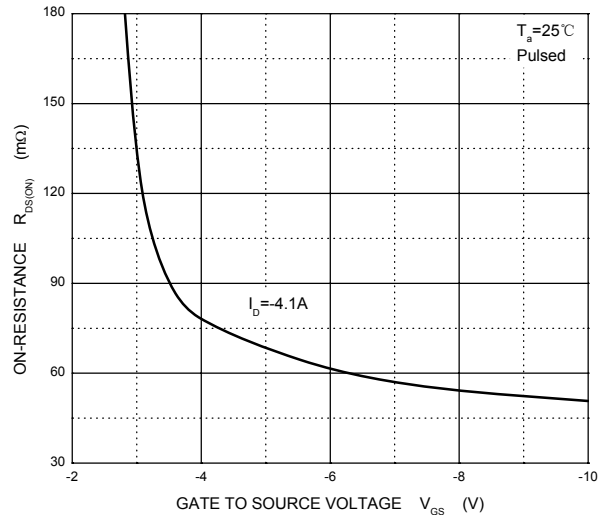
Transfer Characteristics



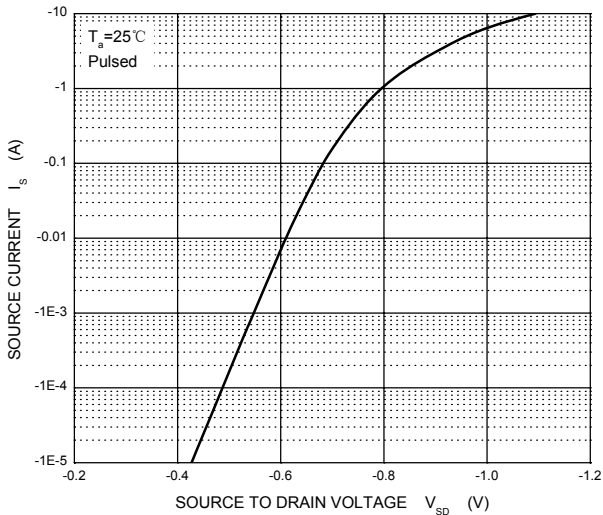
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$





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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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