Micro Commercial Components

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MCQ4406

N -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:Q4406

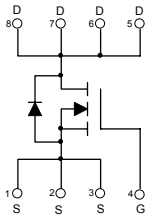
Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current	I_{DM}	40	A
Single Pulsed Avalanche Energy (1)	E_{AS}	105	mJ
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	℃/W
Operating Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~+150	

Notes :

(1).E_{AS} condition: V_{DD}=50V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

Equivalent Circuit



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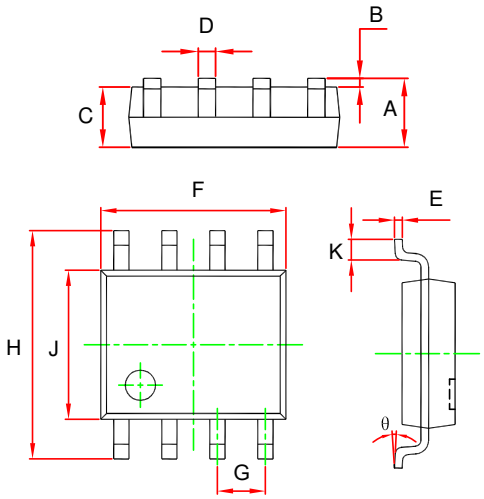


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K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

Electrical characteristics (T_a=25℃ unless otherwise noted)

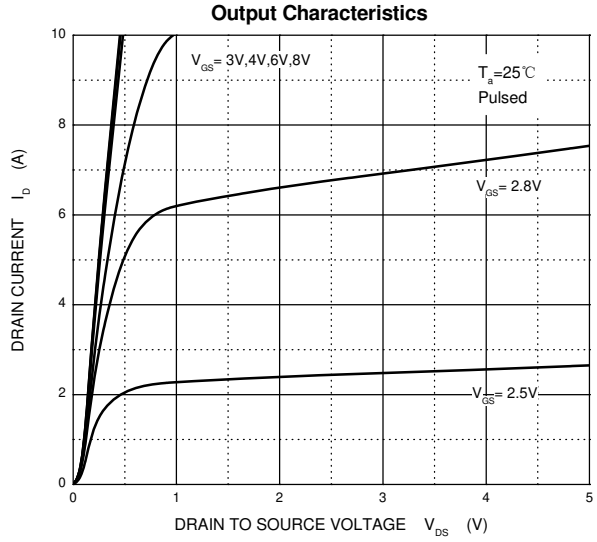
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	3.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =12A		7.6	12	mΩ
		V_{GS} =4.5V, I_D =10A		11	16	mΩ
Forward transconductance	g_{Fs}	V_{DS} =5V, I_D =10A		15		S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V, f =1MHz		1550		pF
Output capacitance	C_{oss}			300		
Reverse transfer capacitance	C_{rss}			180		
Switching characteristics (note 2)						
Total gate charge	Q_g	V_{DS}=15V, V_{GS}=5V, I_D=10A		13		nC
Gate-source charge	Q_{gs}			5.5		
Gate-drain charge	Q_{gd}			3.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=25V,I_D=1A, V_{GS}=10V,R_G=6Ω, R_L=6.7Ω		30		ns
Turn-on rise time	t_r			20		
Turn-off delay time	$t_{d(off)}$			100		
Turn-off fall time	t_f			80		
Gate Resistance	R_g	f =1MHz, V_{DS}=0V, V_{GS}=0V,	0.8		2.4	Ω
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD}	V_{GS} =0V, I_S=10A			1.2	V
Continuous drain-source diode forward current	I_S				10	A
Pulsed drain-source diode forward current	I_{SM}				40	A

Notes:

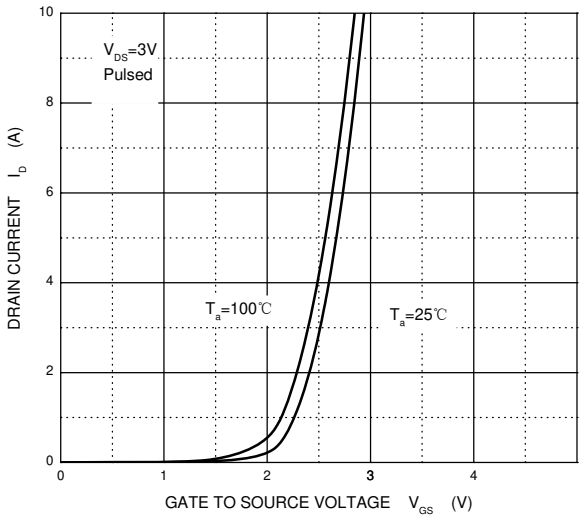
1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.
2. Guaranteed by design, not subject to production testing.

Typical Characteristics

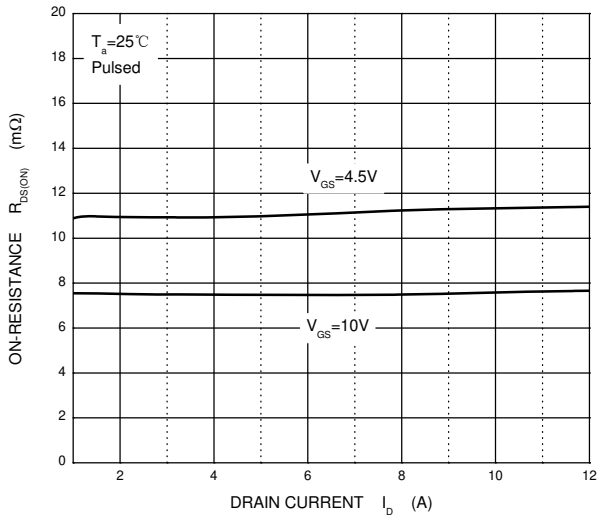
Output Characteristics



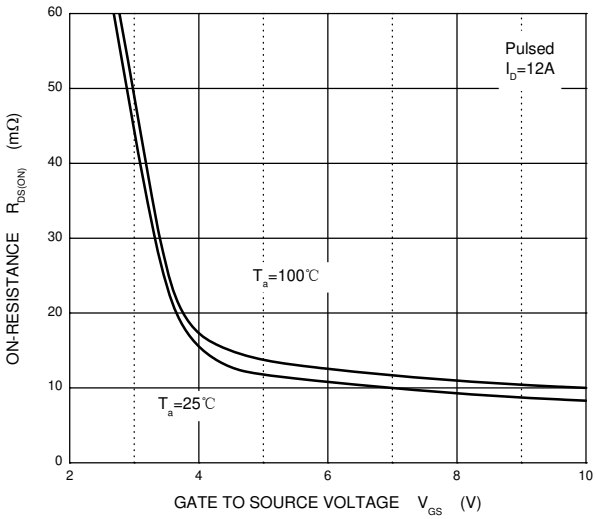
Transfer Characteristics



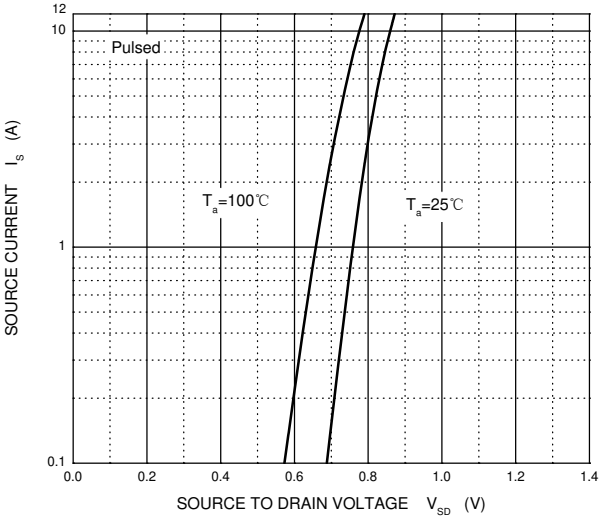
$R_{DS(ON)}$ —— I_D



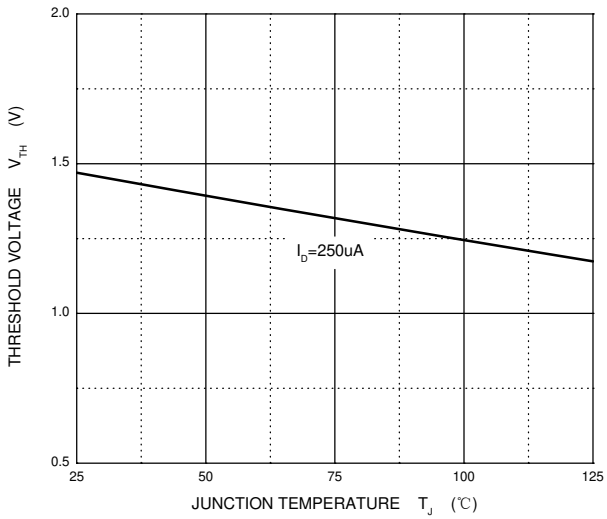
$R_{DS(ON)}$ —— V_{GS}



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