Micro Commercial Components
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MCQ4438

N-Channel Power MOSFET

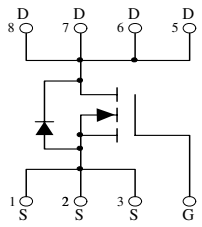
Features

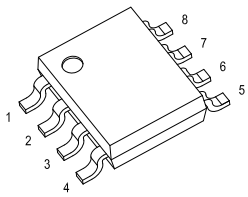
- TrenchFET Power MOSFET
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking:Q4438

Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	60	V
I_D	Drain Current-Continuous(note1)	8.2	A
I_{DM}	Pulsed Drain Current(note2)	40	A
V_{GS}	Gate-source Voltage	±20	V
P_D	Power Dissipation	1.25	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient(note1)	100	℃/W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature	-55 to +150	℃

Equivalent Circuit





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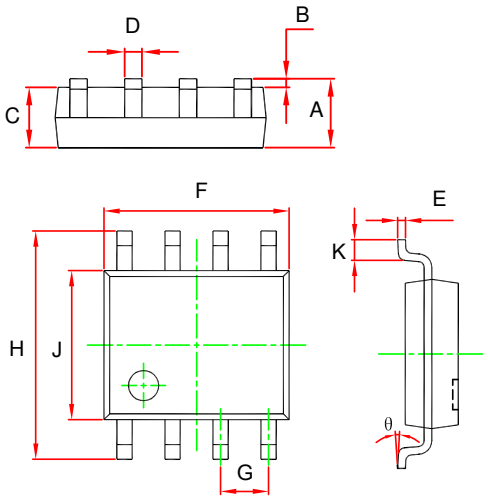


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K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

ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise specified)

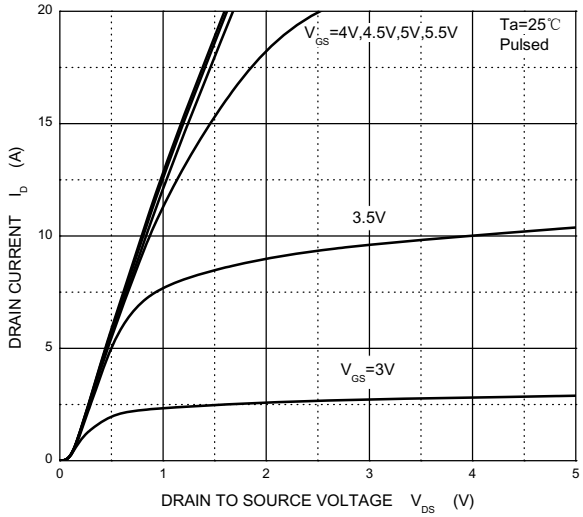
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1		3	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =10V, I_D =8.2A			22	mΩ
		V_{GS} =4.5V, I_D =7.6A			36	mΩ
Forward tranconductance (note 3)	g_{fs}	V_{DS} =5V, I_D =8.2A	10			S
Diode forward voltage (note 3)	V_{SD}	I_S=1A, V_{GS} = 0V			1	V
DYNAMIC PARAMETERS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz			2300	pF
Output Capacitance	C_{oss}			155		pF
Reverse Transfer Capacitance	C_{rss}			116		pF
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=30V R_L=3.6Ω,R_{GEN}=3Ω		8.2		ns
Turn-on rise time	t_r			5.5		ns
Turn-off delay time	$t_{d(off)}$			29.7		ns
Turn-off fall time	t_f			5.2		ns
Total Gate Charge (10V)	Q_g	V_{DS} =30V,V_{GS} =10V,I_D =8.2A			58	nC
Total Gate Charge (4.5V)					30	nC
Gate-Source Charge	Q_{gs}			6		nC
Gate-Drain Charge	Q_{gd}			14.4		nC

Notes :

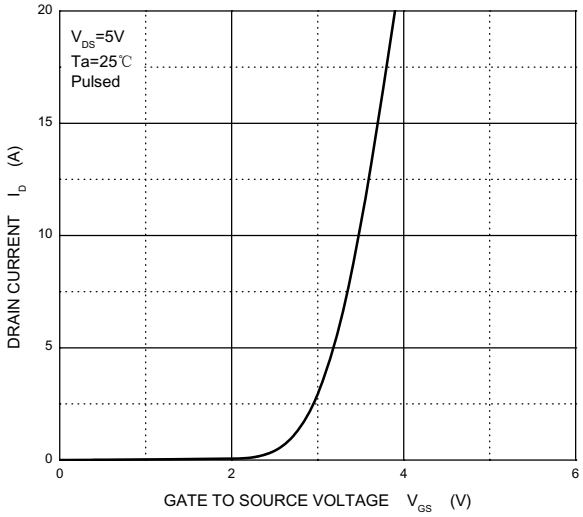
1. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 2oz. Copper, in a still air environment with T_a=25℃.The value in any given application depends on the user's specific board design. The current rating is based on the t ≤10s thermal resistance rating.
2. Repetit e rating : Pulse width limited by junction temperature.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
4. These parameters have no way to verify.

Typical Characteristics

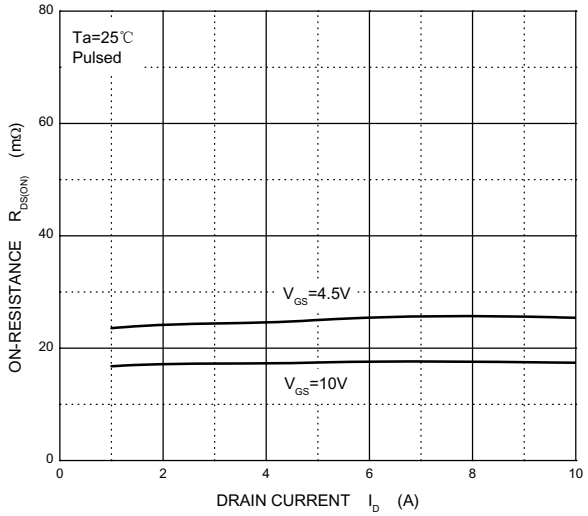
Output Characteristics



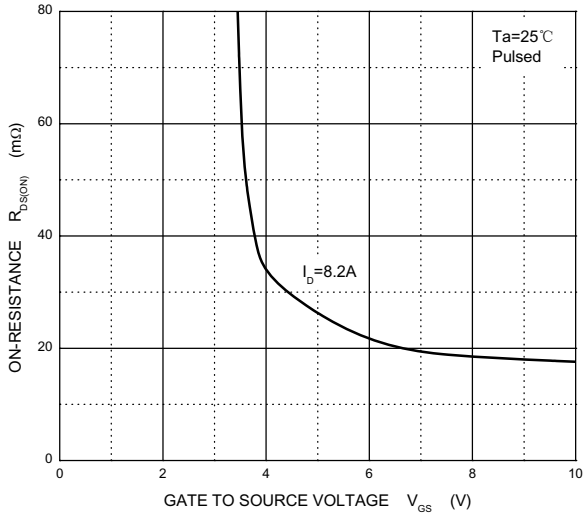
Transfer Characteristics



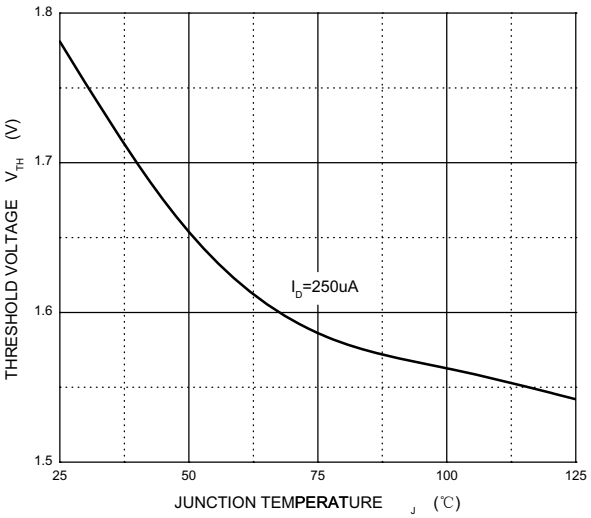
$R_{DS(ON)}$ —— I_D



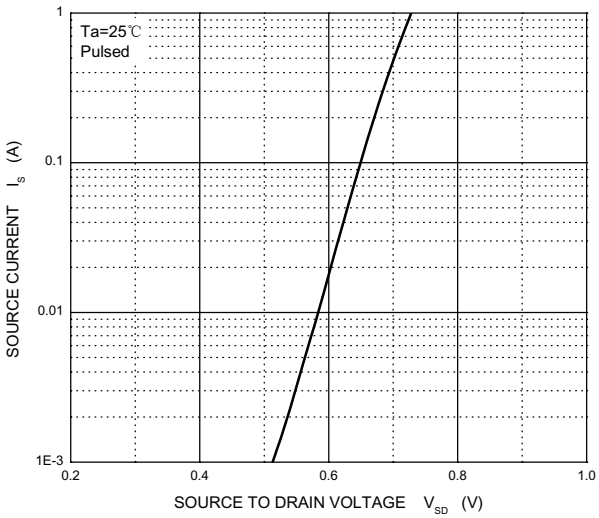
$R_{DS(ON)}$ —— V_{GS}



Threshold Voltage



I_S —— V_{SD}



Micro Commercial Components

Ordering Information :

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

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