

# MCQ4828A-TP Datasheet

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DiGi Electronics Part Number	MCQ4828A-TP-DG
Manufacturer	<a href="#">Micro Commercial Co</a>
Manufacturer Product Number	MCQ4828A-TP
Description	MOSFET 2N-CH 60V 4.5A 8SOP
Detailed Description	Mosfet Array 60V 4.5A (Ta) 1.25W (Ta) Surface Mount 8-SOP



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## Purchase and inquiry

Manufacturer Product Number:

MCQ4828A-TP

Series:

-

Technology:

MOSFET (Metal Oxide)

FET Feature:

-

Current - Continuous Drain (Id) @ 25°C:

4.5A (Ta)

Vgs(th) (Max) @ Id:

3V @ 250µA

Input Capacitance (Ciss) (Max) @ Vds:

540pF @ 30V

Operating Temperature:

150°C (TJ)

Package / Case:

8-SOIC (0.154", 3.90mm Width)

Base Product Number:

MCQ4828

Manufacturer:

Micro Commercial Co

Product Status:

Active

Configuration:

2 N-Channel (Dual)

Drain to Source Voltage (Vdss):

60V

Rds On (Max) @ Id, Vgs:

56mOhm @ 4.5A, 10V

Gate Charge (Qg) (Max) @ Vgs:

10.5nC @ 10V

Power - Max:

1.25W (Ta)

Mounting Type:

Surface Mount

Supplier Device Package:

8-SOP

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

### Features

- Trench MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Maximum Ratings

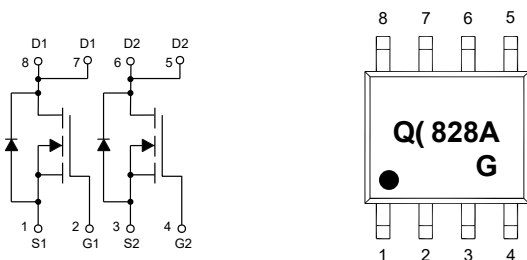
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 78°C/W Junction to Ambient(Note2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	4.5
		$T_A=100^\circ\text{C}$	2.8
Pulsed Drain Current (Note3)	$I_{DM}$	18	A
Total Power Dissipation (Note4)	$P_D$	1.6	W
Avalanche Energy (Note5)	$E_{AS}$	18	mJ

Note:

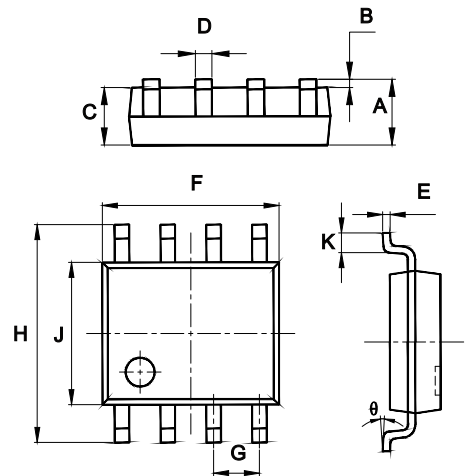
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The Value of  $R_{\theta JA}$  is Measured with the Device Mounted on 1in2 FR-4 Board with 2oz. Copper, in a Still Air Environment with  $T_A=25^\circ\text{C}$ .
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_D$  is based on max. junction temperature, using junction-ambient thermal resistance.
5.  $T_J=25^\circ\text{C}$ ,  $V_{DS}=30\text{V}$ ,  $V_{GS}=10\text{V}$ ,  $L=0.5\text{mH}$ .

### Internal Structure and Marking Code



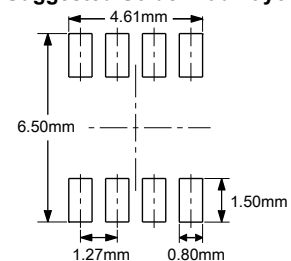
## Dual N-Channel Power MOSFET

### SOP-8



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.35	1.75	
B	0.004	0.010	0.10	0.25	
C	0.053	0.061	1.35	1.55	
D	0.013	0.020	0.33	0.51	
E	0.007	0.010	0.17	0.25	
F	0.185	0.200	4.70	5.10	
G	0.050		1.270		TYP.
H	0.228	0.244	5.80	6.20	
J	0.150	0.157	3.80	4.00	
K	0.016	0.050	0.40	1.27	
$\theta$	0°	8°	0°	8°	

#### Suggested Solder Pad Layout

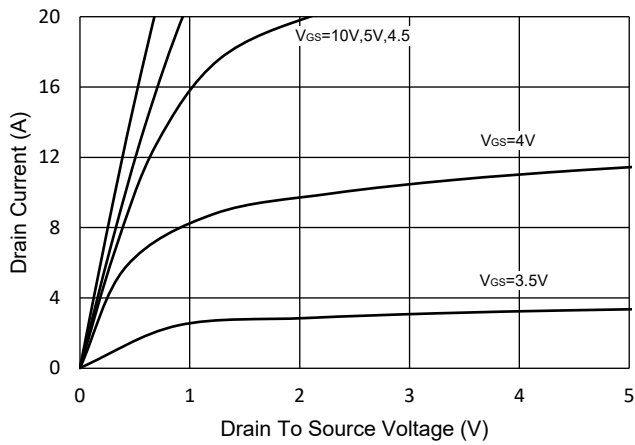


**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

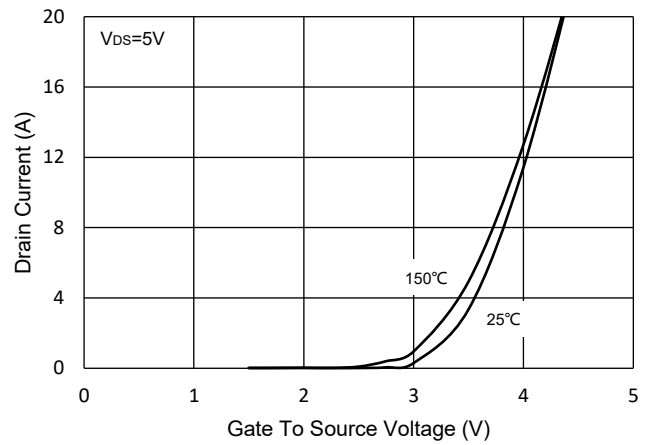
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	2.1	3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=4.5A$		32	56	m $\Omega$
		$V_{GS}=4.5V, I_D=3A$		46	77	
Gate Resistance	$R_G$	f=1MHz, Open drain		2		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				4.5	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=5.6A$			1	V
Reverse Recovery Time	$t_{rr}$	$I_F=2.25A, dI_F/dt=100A/\mu s$		25		ns
Reverse Recovery Charge	$Q_{rr}$			18		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		824		pF
Output Capacitance	$C_{oss}$			44		
Reverse Transfer Capacitance	$C_{riss}$			39		
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=10V, I_D=4.5A$		17.5		nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=30V, V_{GS}=10V, R_G=2.2\Omega, I_D=2.25A$		4.3		ns
Turn-On Rise Time	$t_r$			17		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	$t_f$			2.5		

### Curve Characteristics

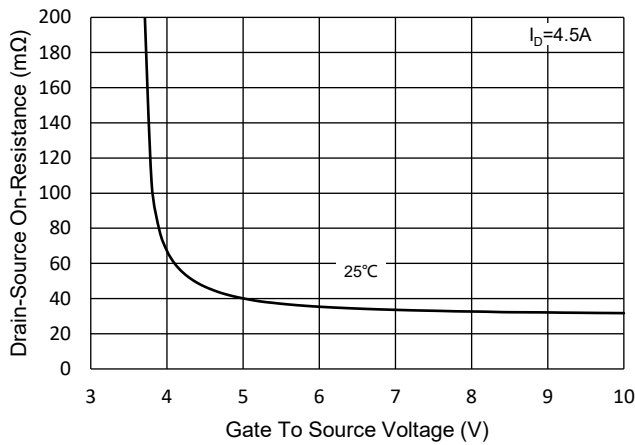
**Fig. 1 - Typical Output Characteristics**



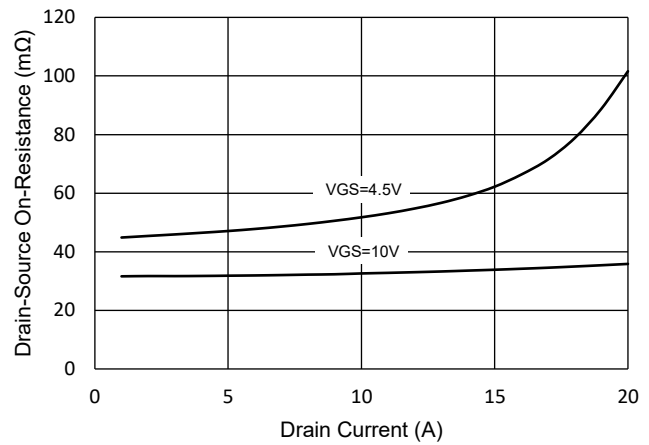
**Fig.2 - Transfer Characteristic**



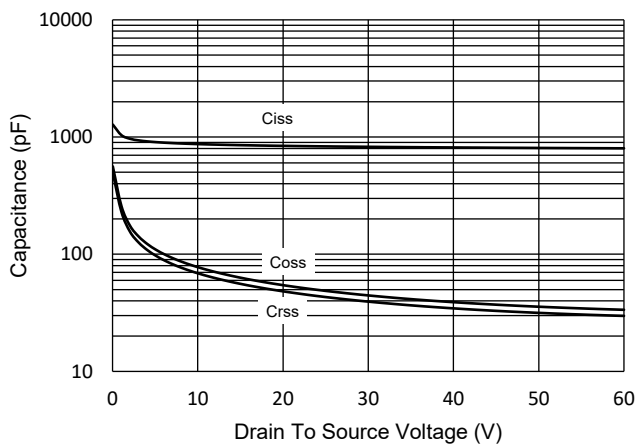
**Fig.3 - R<sub>DS(ON)</sub> - V<sub>GS</sub>**



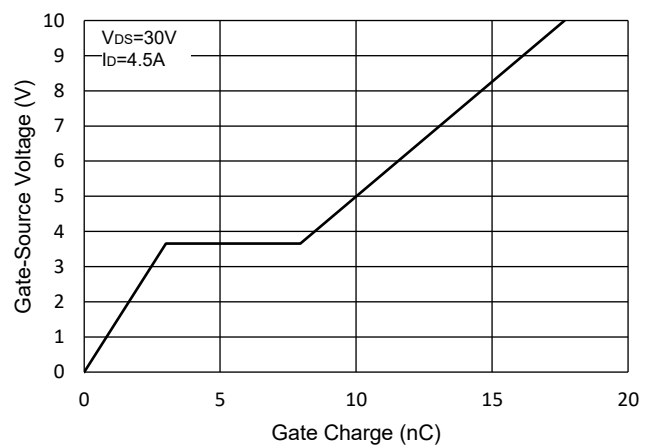
**Fig.4 - R<sub>DS(ON)</sub> - I<sub>D</sub>**



**Fig.5 - Capacitance Characteristics**

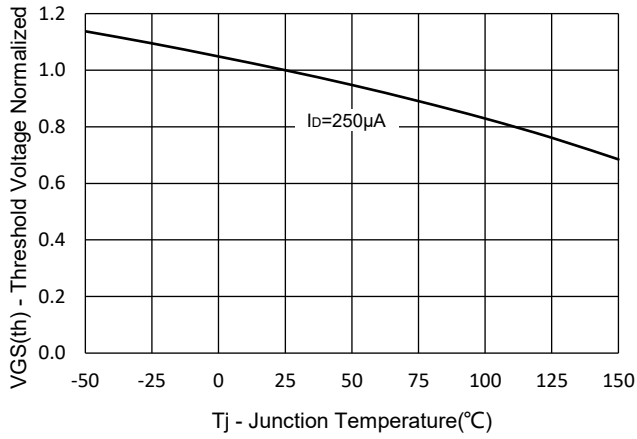


**Fig.6 - Gate Charge**

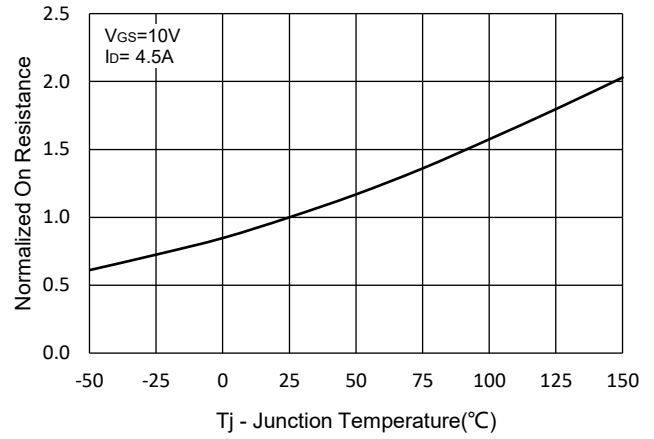


### Curve Characteristics

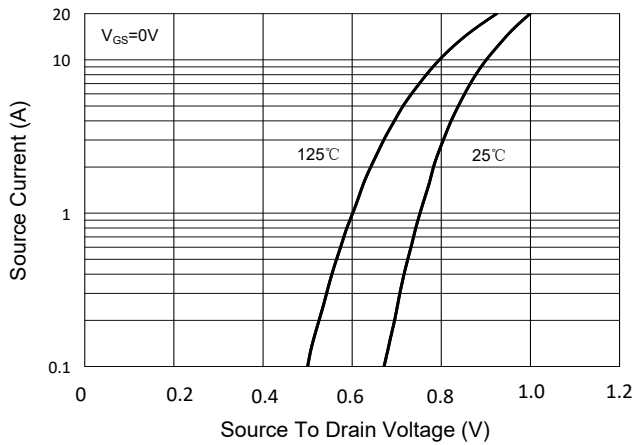
**Fig.7 - Normalized Threshold Voltage**



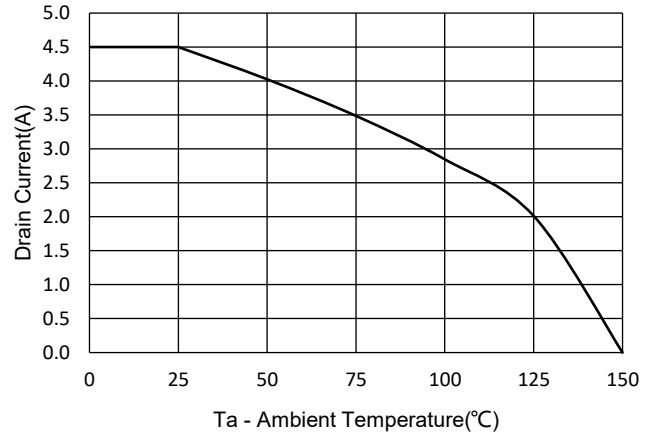
**Fig.8 - Normalized On Resistance Characteristics**



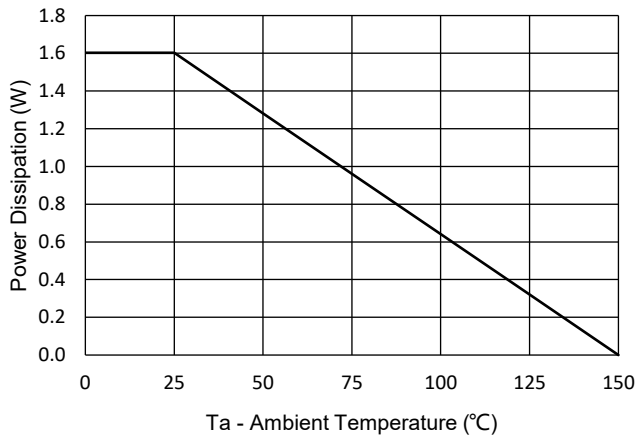
**Fig.9 - I<sub>S</sub> - V<sub>SD</sub>**



**Fig.10 - Drain Current**



**Fig.11 - PD Dissipation**



### Curve Characteristics

Fig.12 - Safe Operation Area

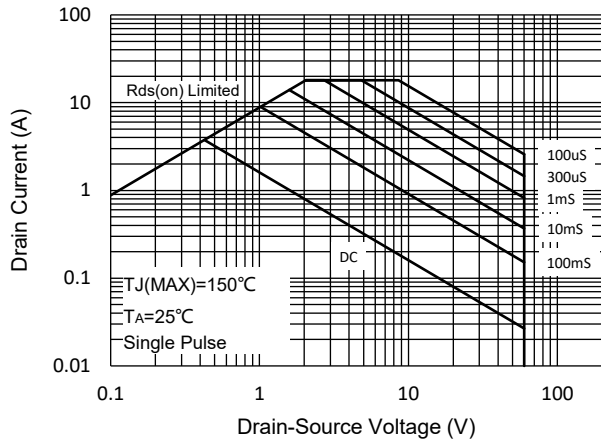
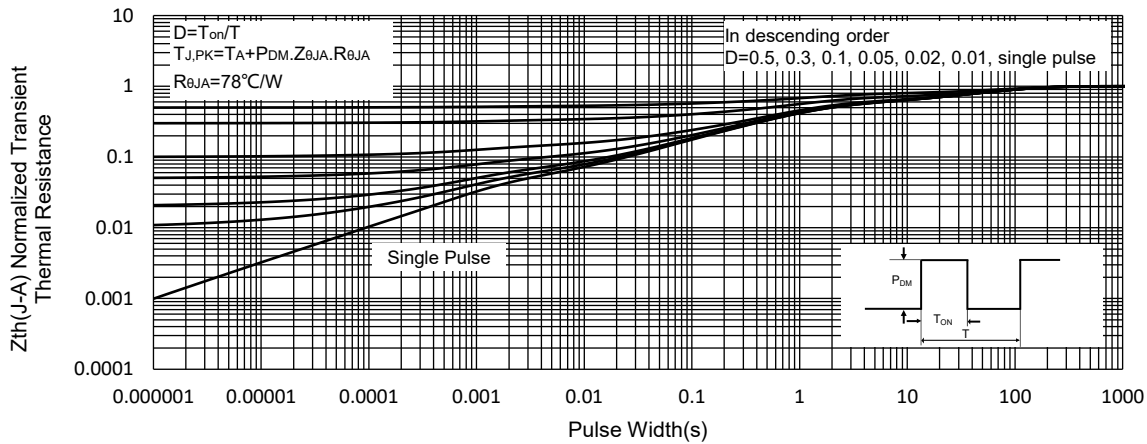


Fig.13 - Normalized Transient Thermal Impedance



## Ordering Information

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

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