

MCU60N04-TP Datasheet

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DiGi Electronics Part Number	MCU60N04-TP-DG
Manufacturer	Micro Commercial Co
Manufacturer Product Number	MCU60N04-TP
Description	MOSFET N-CH 40V 60A DPAK
Detailed Description	N-Channel 40 V 60A (Ta) 1.25W Surface Mount DPAK

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Purchase and inquiry

Manufacturer Product Number:

MCU60N04-TP

Series:

-

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

40 V

Drive Voltage (Max Rds On, Min Rds On):

4.5V, 10V

Vgs(th) (Max) @ Id:

2.5V @ 250µA

Vgs (Max):

±20V

FET Feature:

-

Operating Temperature:

-55°C ~ 150°C (TJ)

Supplier Device Package:

DPAK

Base Product Number:

MCU60

Manufacturer:

Micro Commercial Co

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

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

60A (Ta)

Rds On (Max) @ Id, Vgs:

13mOhm @ 20A, 10V

Gate Charge (Qg) (Max) @ Vgs:

29 nC @ 10 V

Input Capacitance (Ciss) (Max) @ Vds:

1800 pF @ 20 V

Power Dissipation (Max):

1.25W

Mounting Type:

Surface Mount

Package / Case:

TO-252-3, DPAK (2 Leads + Tab), SC-63

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

ECCN:

EAR99

Moisture Sensitivity Level (MSL):

1 (Unlimited)

HTSUS:

8541.29.0095

Features

- High Density Cell Design for Ultra Low $R_{DS(on)}$
- Fully Characterized Avalanche Voltage and Current
- Good Stability and Uniformity With High EAS
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

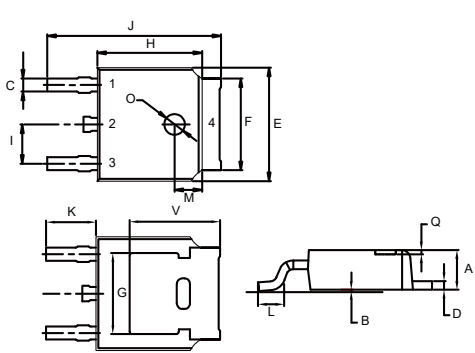
N-CHANNEL MOSFET

Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 100°C/W Junction to Ambient

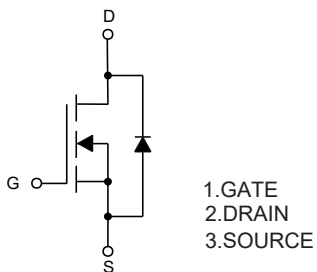
Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	40	V
Gate -Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	60	A
Drain Current-Pulsed	I_{DM}	240	A
Power Dissipation	P_D	1.25	W
Single Pulsed Avalanche Energy ^(Note1)	E_{AS}	400	mJ

DPAK



DIMENSIONS					NOTE
DIM	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.

Internal Structure



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Threshold Voltage ^(Note2)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.5	2.5	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Drain-Source On-Resistance ^(Note2)	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		8	13	m Ω
		$V_{GS}=4.5V, I_D=20A$		10.5	20	
Forward Transconductance ^(Note2)	g_{FS}	$V_{DS}=25V, I_D=20A$	24			S
Dynamic Characteristics^(Note3)						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		1800		pF
Output Capacitance	C_{oss}			280		
Reverse Transfer Capacitance	C_{rss}			190		
Switching Characteristics^(Note3)						
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=20A$		29		nC
Gate-Source Charge	Q_{gs}			4.5		
Gate-Drain Charge	Q_{gd}			6.4		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=20V, V_{GS}=10V, R_G=3\Omega,$ $I_D=2A, R_L=1\Omega,$		6.4		ns
Turn-on Rise Time	t_r			17.2		
Turn-off Delay Time	$t_{d(off)}$			29.6		
Turn-off Fall Time	t_f			16.8		
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage ^(Note 2)	V_{SD}	$V_{GS}=0V, I_S=20A$			1.2	V
Continuous Drain-Source Diode Forward Current	I_S				60	A
Pulsed Drain-Source Diode Forward Current	I_{SM}				240	A

Notes:

1. E_{AS} Condition: $V_{DD}=20V, L=0.5mH, R_G=25\Omega$, Starting $T_J = 25^\circ C$
2. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Guaranteed by Design, Not Subject to Production.

Curve Characteristics

Fig. 1 - Output Characteristics

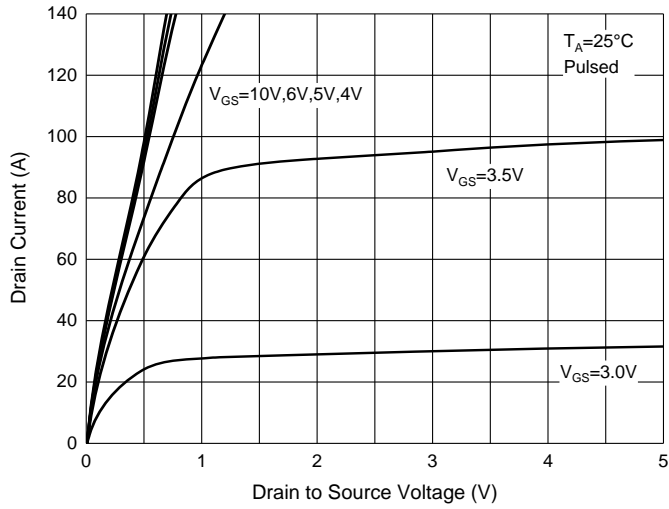


Fig. 2 - Transfer Characteristics

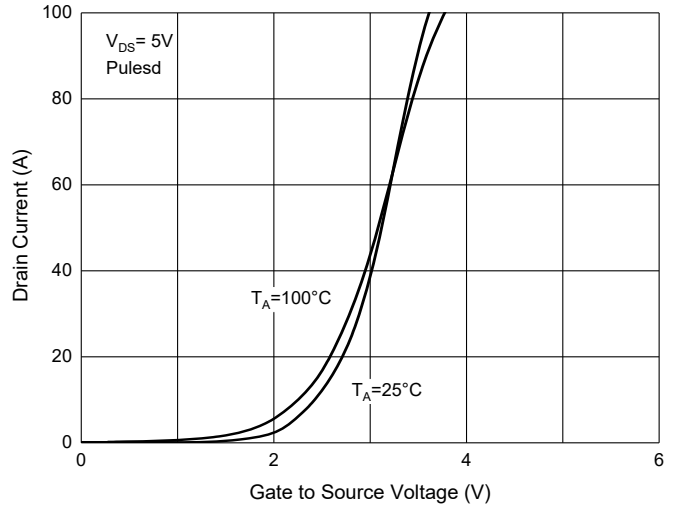


Fig. 3 - $R_{DS(ON)} - I_D$

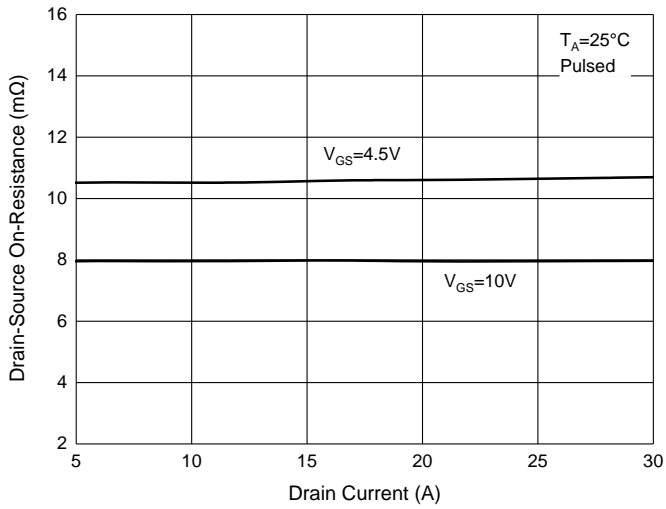


Fig. 4 - $R_{DS(ON)} - V_{GS}$

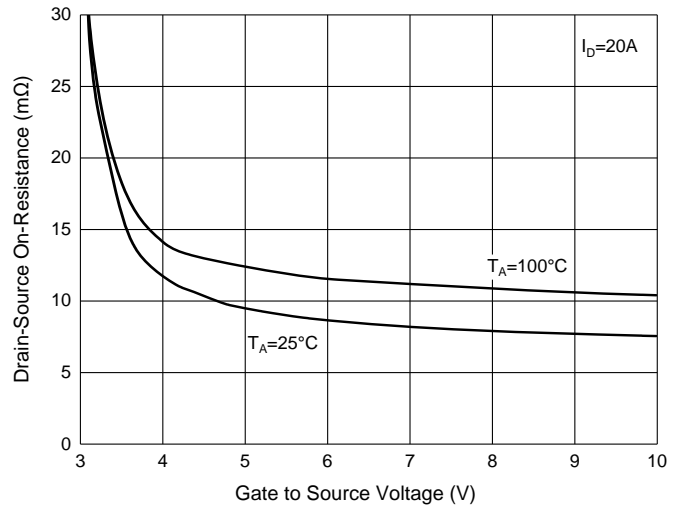


Fig. 5 - $I_S - V_{SD}$

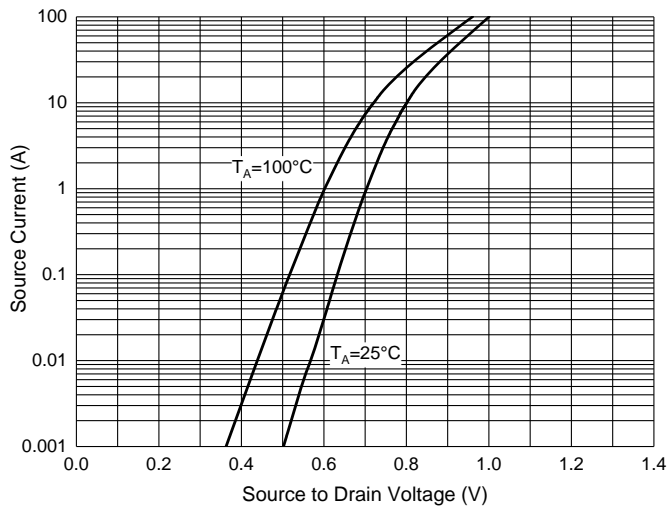
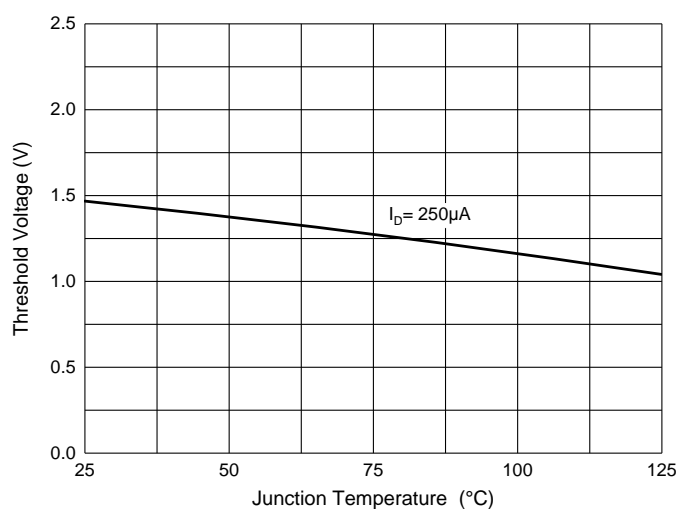


Fig. 6 - Threshold Voltage



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:2.5Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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