

MCU15N10-TP Datasheet

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DiGi Electronics Part Number	MCU15N10-TP-DG
Manufacturer	Micro Commercial Co
Manufacturer Product Number	MCU15N10-TP
Description	MOSFET N-CH
Detailed Description	N-Channel 100 V 15A (Tc) 28W Surface Mount DPAK

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Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

MCU15N10-TP

Series:

-

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

100 V

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

10V

Vgs(th) (Max) @ Id:

2.9V @ 250 μ A

Vgs (Max):

\pm 20V

FET Feature:

-

Operating Temperature:

-55 $^{\circ}$ C ~ 175 $^{\circ}$ C (TJ)

Supplier Device Package:

DPAK

Base Product Number:

MCU15

Manufacturer:

Micro Commercial Co

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25 $^{\circ}$ C:

15A (Tc)

Rds On (Max) @ Id, Vgs:

100mOhm @ 5A, 10V

Gate Charge (Qg) (Max) @ Vgs:

11 nC @ 10 V

Input Capacitance (Ciss) (Max) @ Vds:

612 pF @ 50 V

Power Dissipation (Max):

28W

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

- Fast Switching
- Improved dv/dt Capability
- Excellent Package for Good Heat Dissipation
- 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)

Maximum Ratings

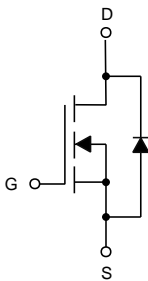
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 5.4°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	15
		$T_C=100^\circ\text{C}$	8.5
Pulsed Drain Current ^(Note 1)	I_{DM}	56	A
Single Pulse Avalanche Energy ^(Note 2)	E_{AS}	16	mJ
Total Power Dissipation	P_D	28	W

Note:

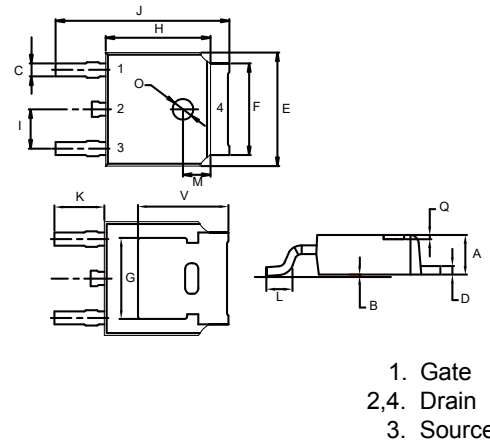
- 1.Pulse Width Limited by Maximum Junction Temperature.
- 2.EAS Condition: $T_J=25^\circ\text{C}, V_{DD}=50\text{V}, V_G=10\text{V}, R_g=25\Omega$.

Internal Structure



N-CHANNEL MOSFET

DPAK(TO-252)



1. Gate
- 2,4. Drain
3. Source

DIM	DIMENSIONS				NOTE
	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.

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
		$V_{DS}=100V, V_{GS}=0V, T_C=100^\circ C$			5	
Gate-Threshold Voltage ^(Note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	2.2	2.9	V
Drain-Source On-Resistance ^(Note 3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$		0.066	0.1	Ω
Forward Transconductance ^(Note 3)	g_{FS}	$V_{DS}=5V, I_D=4.5A$	5			S
Dynamic Characteristics^(Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		612		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			91		
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=4.5A$		11		nC
Gate-Source Charge	Q_{gs}			1.9		
Gate-Drain Charge	Q_{gd}			2.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, R_L=8.6\Omega, V_{GS}=10V, R_G=3\Omega$		8		ns
Turn-On Rise Time	t_r			3		
Turn-Off Delay Time	$t_{d(off)}$			17		
Turn-Off Fall Time	t_f			4.5		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C=25^\circ C$		14		A
Pulsed Diode Forward Current	I_{SM}			56		
Body Diode Voltage	V_{SD}	$I_{SD}=7A, V_{GS}=0V$		0.82	1	V
Reverse Recovery Time	t_{rr}	$I_F=4.5A, di/dt=500A/\mu s$		21		ns
Reverse Recovery Charge	Q_{rr}				97	
Forward Turn-on Time	t_{on}	Intrinsic Turn-On Time is Negligible(Turn-On is Dominated by L_S+L_D)				

Note 3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1.5\%$.

4. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Output Characteristics

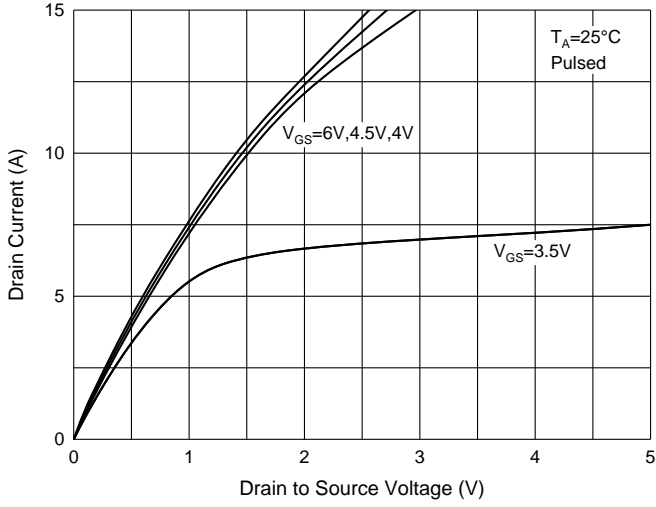


Fig. 2 - Transfer Characteristics

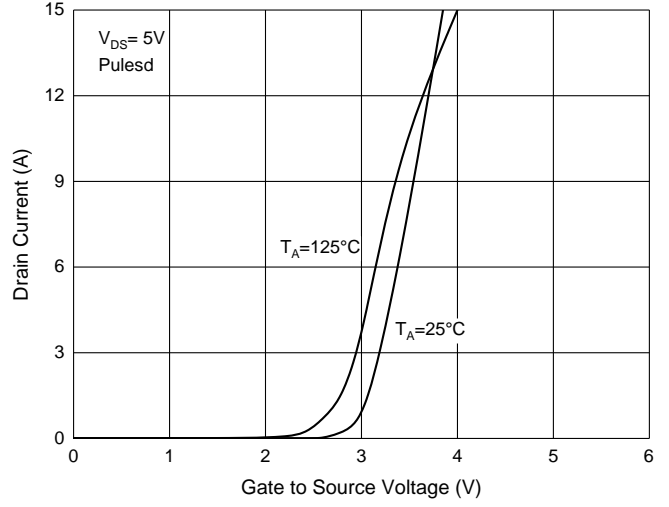


Fig. 3 - $R_{DS(ON)} - V_{GS}$

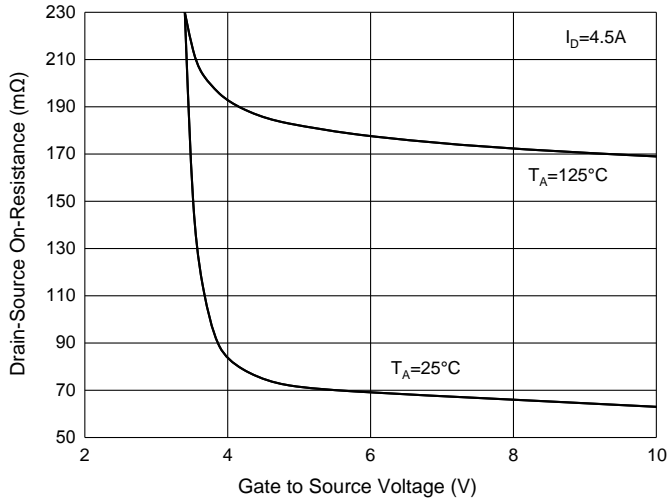


Fig. 4 - $I_S - V_{SD}$

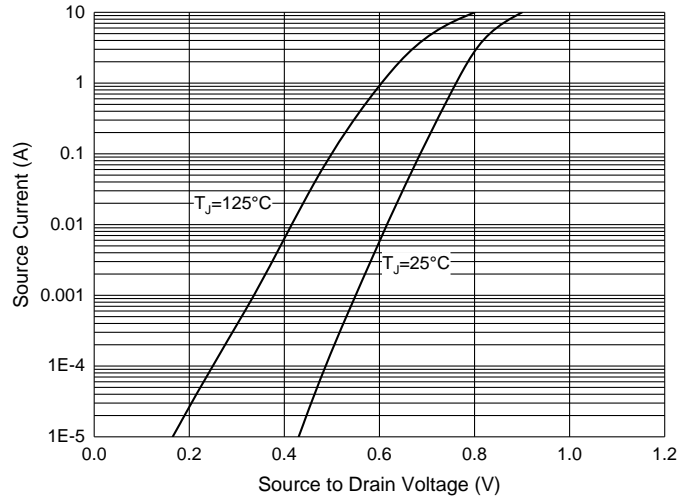


Fig. 5 - $R_{DS(ON)} - I_D$

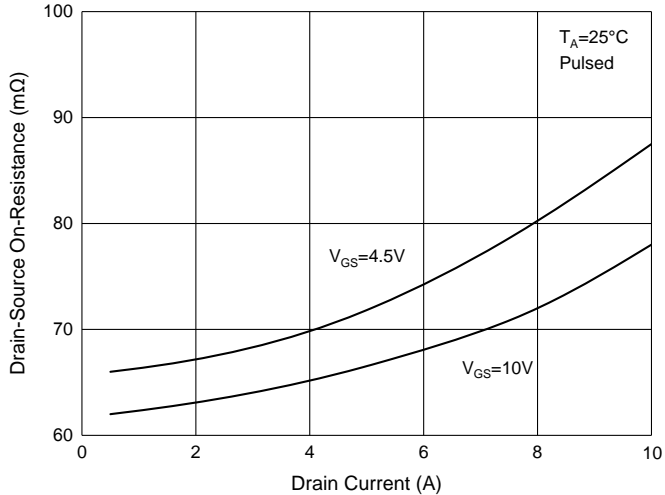
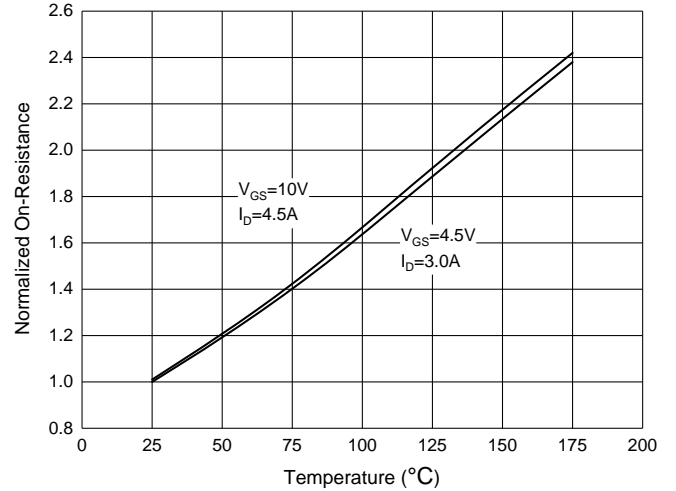


Fig. 6 - $R_{DS(ON)} - \text{Temperature}$



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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