THE DATASHEET OF

MCU15N10A-TP

Features

- Trench Power MV MOSFET Technology
- Excellent Package For Heat Dissipation
- High Density Cell Design For Low $R_{DS(on)}$
- 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)

N-CHANNEL MOSFET

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 50°C/W Junction to Ambient (Note2)
- Thermal Resistance: 3°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	15	A
	T_C=100°C		10.6	A
Pulsed Drain Current(Note 3)		I_{DM}	60	A
Single Pulse Avalanche Energy(Note 4)		E_{AS}	9	mJ
Total Power Dissipation(Note 5)		P_D	50	W

Note:

1.Halogen free"Green"products are defined as those which contain ＜900ppm bromine,＜900ppm chlorine(＜1500ppm total Br+Cl) and ＜1000ppm antimony compounds

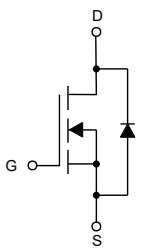
2.The value of RthJA is measured with the device mounted on 1 in2 FR-4 board with 2oz.copper, in a still air environment with TA=25°C

3.Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

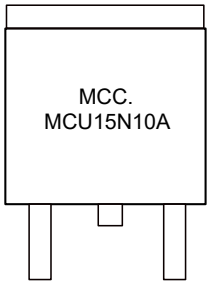
4.P_D is based on max. junction temperature, using junction-case thermal resistance.

5.EAS Condition:T_J=25°C,V_{DD}=50V,V_{GS}=10V,L=0.5mH

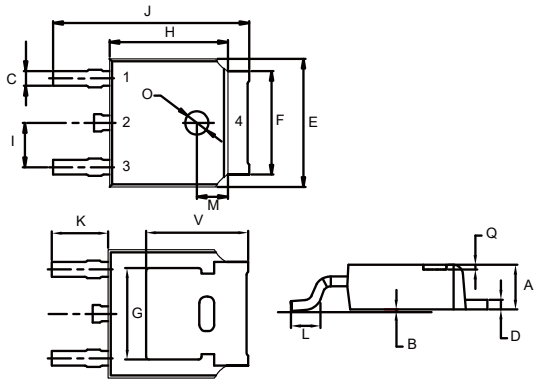
Internal Structure and Marking Code



1.GATE
2.DRAIN
3.SOURCE
4.DRAIN



DPAK



DIMENSIONS					
DIM	INCHES		MM		NOTE
	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=250μA	100			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.1	1.8	3	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=8A		80	110	mΩ
		V_{GS}=4.5V, I_D=8A		85	120	
Gate Resistance	R_G	f=1MHz, Open drain		2		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				15	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=15A		0.8	1.2	V
Reverse Recovery Time	t_{rr}	I_F=7.5A, dI_F/dt=100A/μs		33		ns
Reverse Recovery Charge	Q_{rr}			39		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V,f=1MHz		1122		pF
Output Capacitance	C_{oss}			31		
Reverse Transfer Capacitance	C_{rss}			28		
Total Gate Charge	Q_g	V_{DS}=50V,V_{GS}=10V,I_D=10A		28		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			6		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, R_G=2.2Ω, I_D=10A		6.8		ns
Turn-On Rise Time	t_r			26		
Turn-Off Delay Time	$t_{d(off)}$			26		
Turn-Off Fall Time	t_f			3		

Curve Characteristics

Fig. 1 Typical Output Characteristics

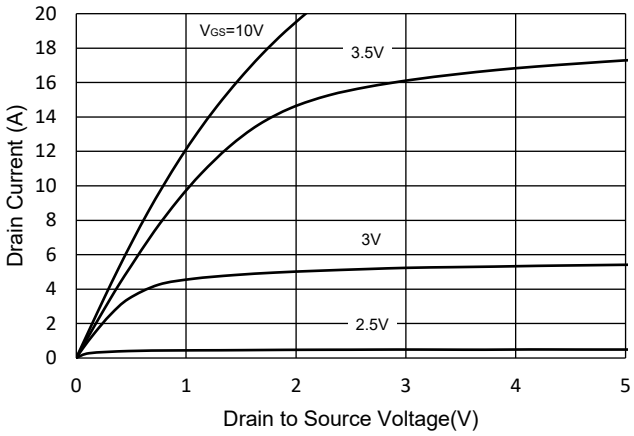


Fig.2 Transfer Characteristic

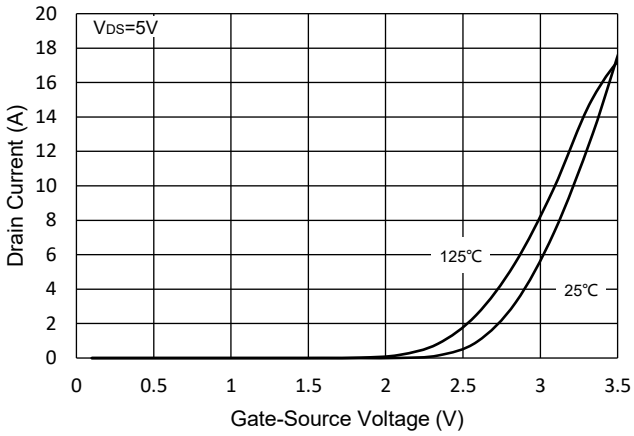


Fig.3 Rdson-Vgs

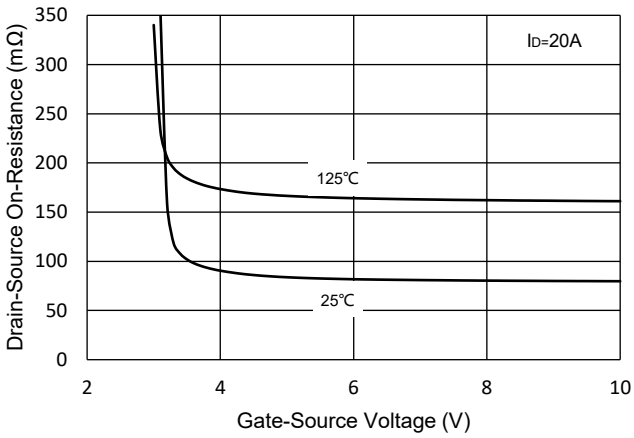


Fig.4 $R_{DS(ON)}$-I_D

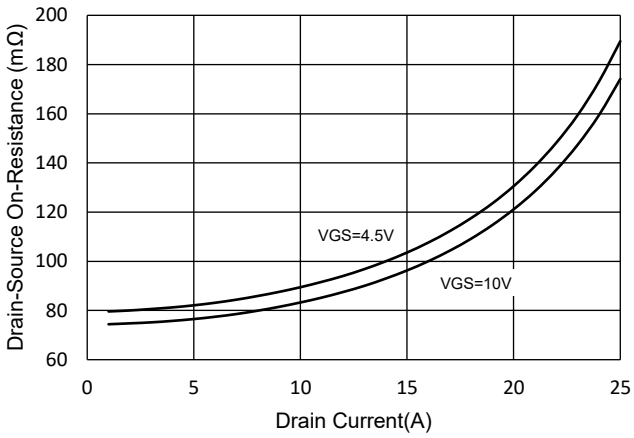


Fig.5 Capacitance Characteristics

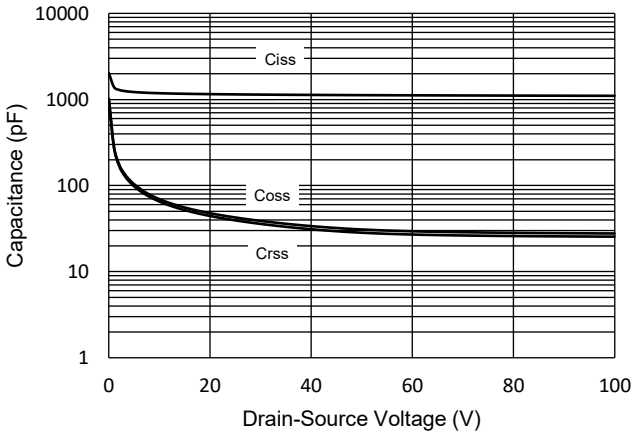
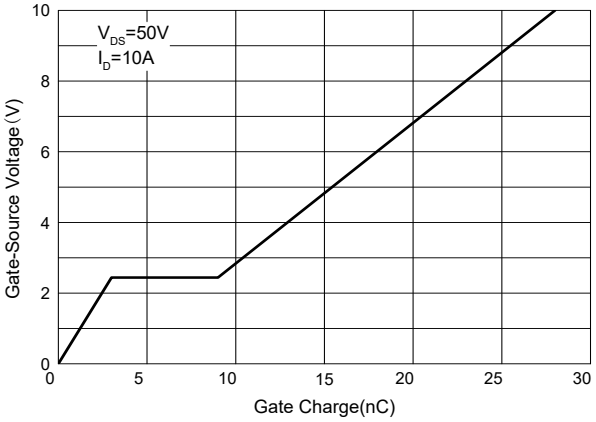


Fig.6 Gate Charge



Curve Characteristics

Fig.7 Normalized Threshold Voltage

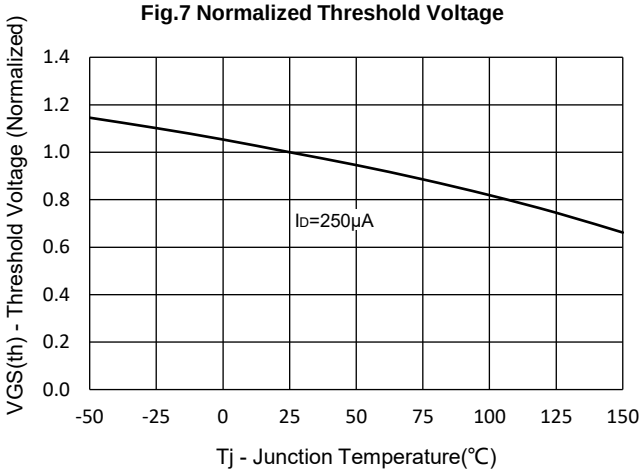


Fig.8 Normalized On Resistance Characteristics

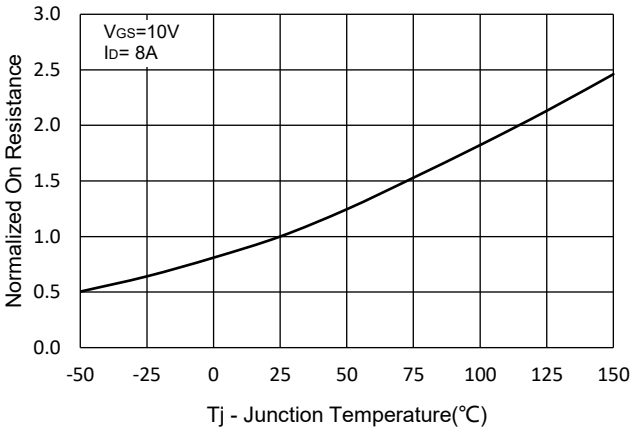


Fig.9 IS-VSD

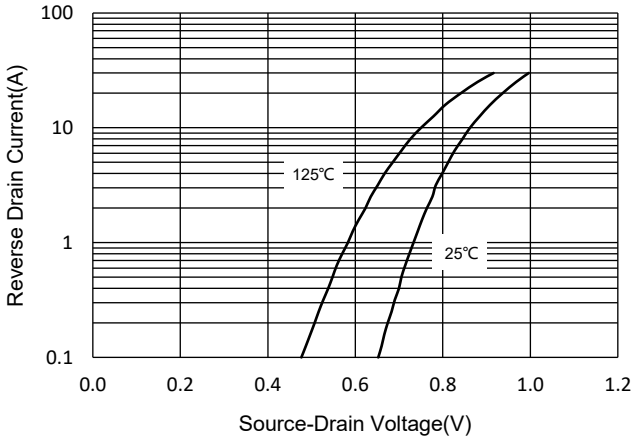


Fig.10 Drain Current

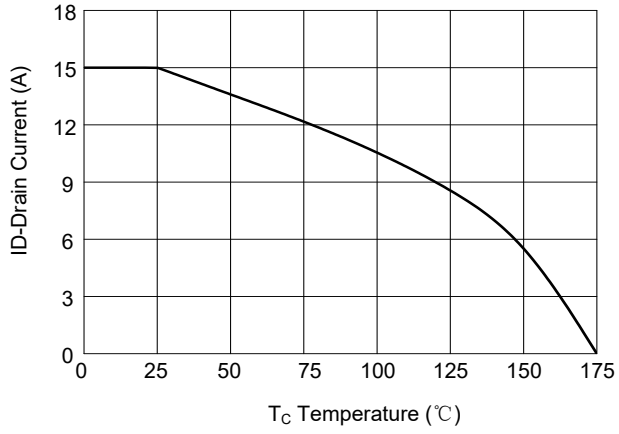
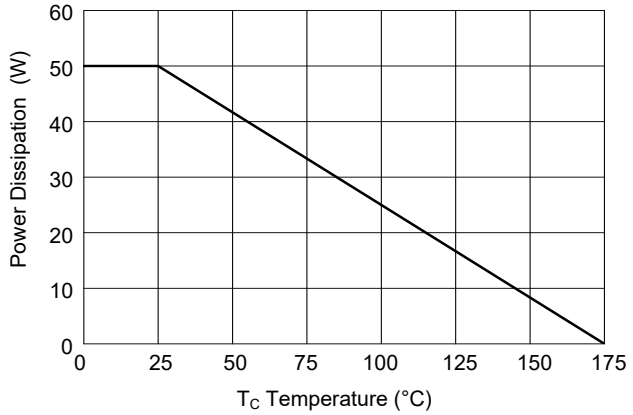


Fig.11 Power Dissipation



Curve Characteristics

Fig.12 Safe Operation Area

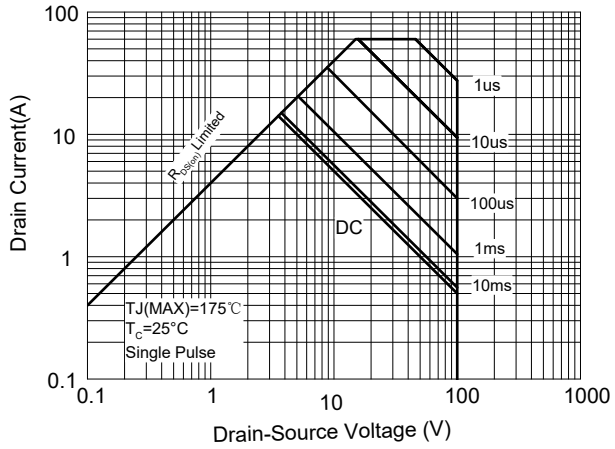
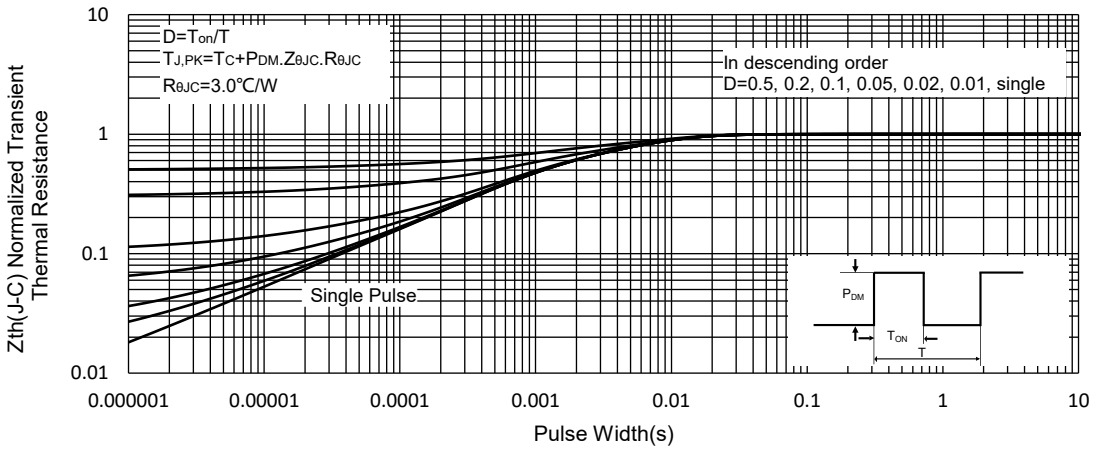


Fig.13 Normalized Transient Thermal Impedance



Ordering Information

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

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