Features

- Halogen Free."Green"Device(Note1)
- Excellent Package for Good Heat Dissipation
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 3
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-CHANNEL MOSFET

Maximum Ratings

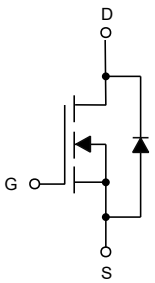
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.5°C/W Junction to Case(Steady-State)(Note2)

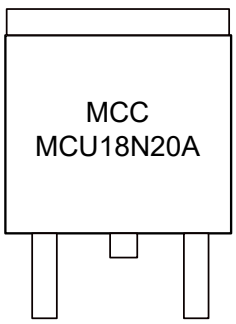
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	18	A
	T_C=100°C		11	
Pulsed Drain Current(Note3)		I_{DM}	72	A
Total Power Dissipation(Note4)		P_D	83.3	W
Single Pulsed Avalanche Energy(Note5)		E_{AS}	286	mJ

Note:

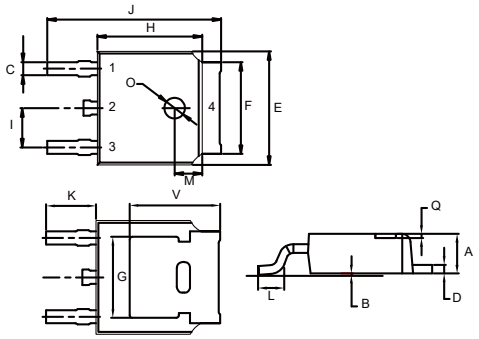
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Rθjc is guaranteed by design while RθjA is determined by the user's board design
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.
5. T_J=25°C, V_{DD}=150V, V_{GS}=10V, L=10mH

Internal Structure and Marking Code





DPAK(TO-252)



1. Gate
2,4. Drain
3. Source

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	200			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=200V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	2.5	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=9A		0.1	0.15	Ω
Gate Resistance	R_g	F=1 MHz, Open drain		1.1		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				18	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=9A			1.4	V
Reverse Recovery Time	t_{rr}	I_F=18A, dI_F/dt=100A/μs		153		ns
Reverse Recovery Charge	Q_{rr}			1107		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		894		pF
Output Capacitance	C_{oss}			167		
Reverse Transfer Capacitance	C_{rss}			90		
Total Gate Charge	Q_g	V_{DS}=100V,V_{GS}=10V,I_D=18A		55		nC
Gate-Source Charge	Q_{gs}			4.7		
Gate-Drain Charge	Q_{gd}			32		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=100V, V_{GS}=10V, R_{GEN}=6Ω, I_{DS}=18A		8.6		ns
Turn-On Rise Time	t_r			51		
Turn-Off Delay Time	$t_{d(off)}$			49		
Turn-Off Fall Time	t_f			23		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

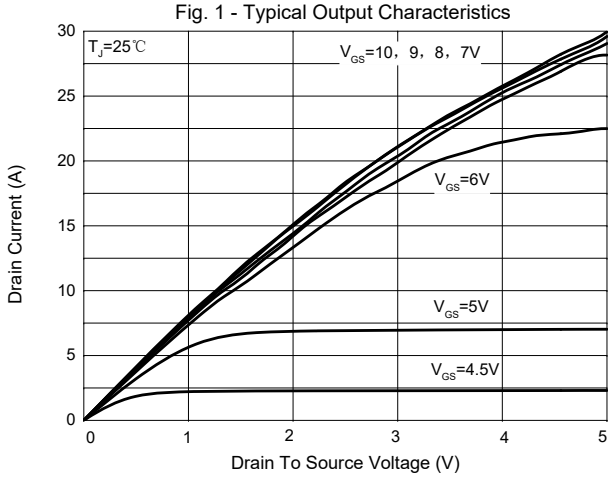


Fig. 2 - Transfer Characteristics

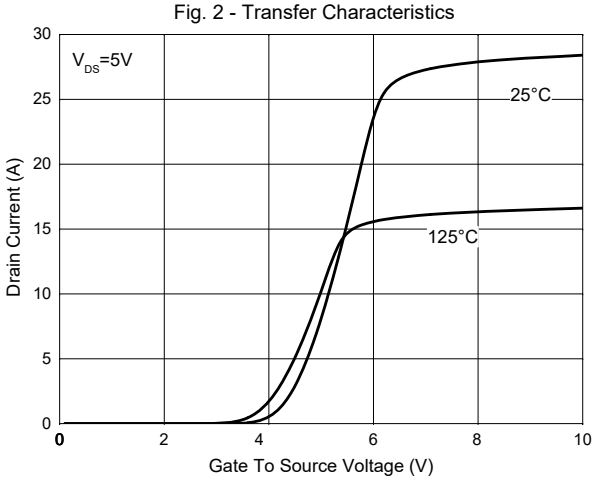


Fig. 3 - $R_{DS(ON)}$—I_D

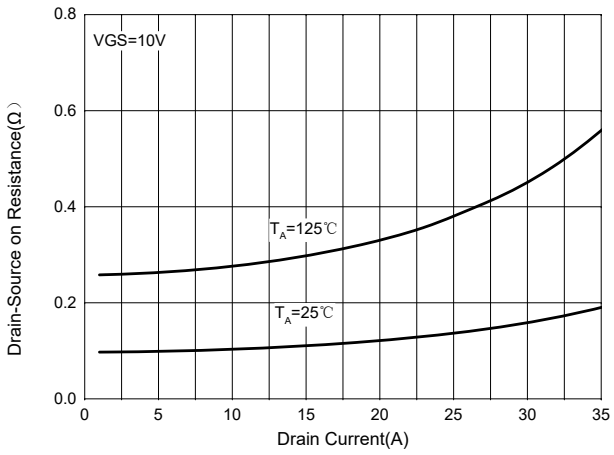


Fig. 4 - $R_{DS(ON)}$—V_{GS}

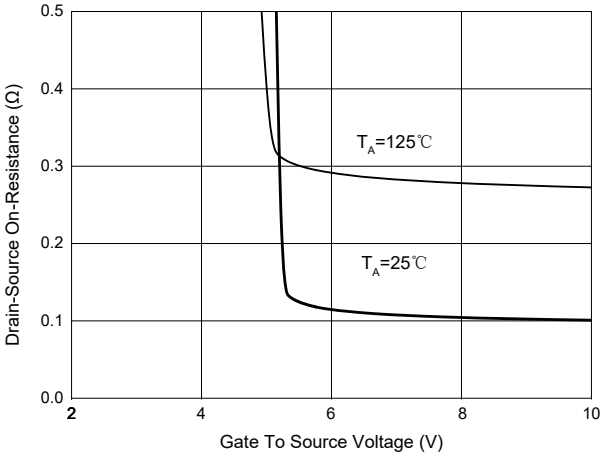


Fig. 5 - Capacitance Characteristics

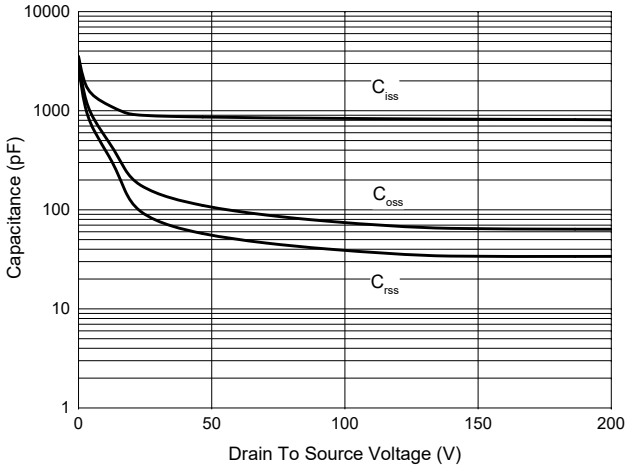
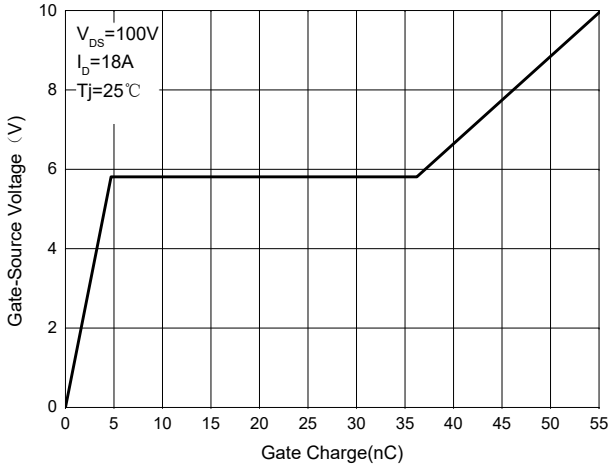


Fig. 6 - GateCharge



Curve Characteristics

Fig.7-NormalizedOnResistanceCharacteristics

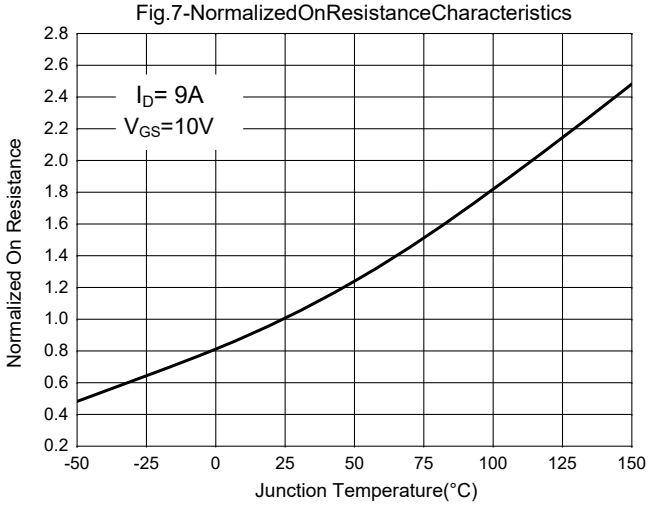


Fig. 8 - Nomalized Threshold voltage

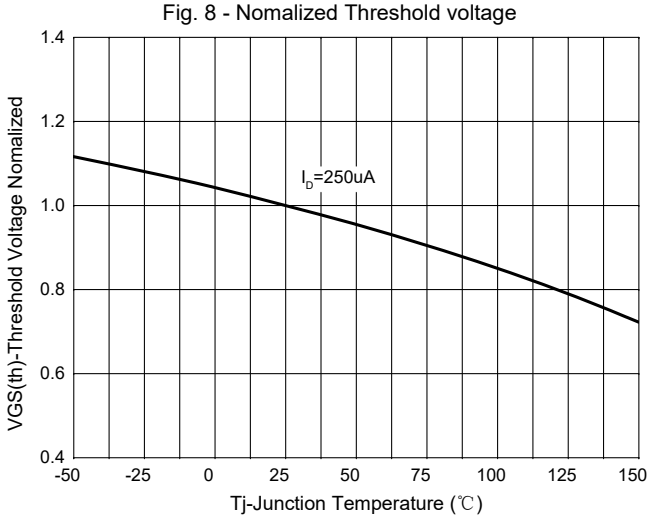


Fig. 9 - I_S—V_{SD}

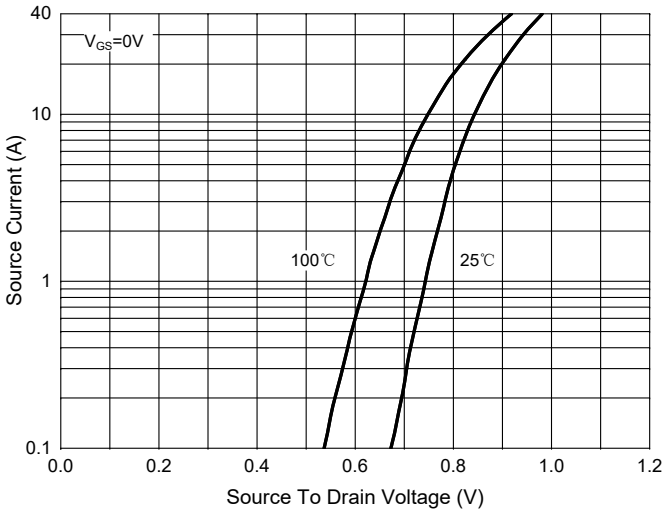


Fig. 10 - Current dissipation

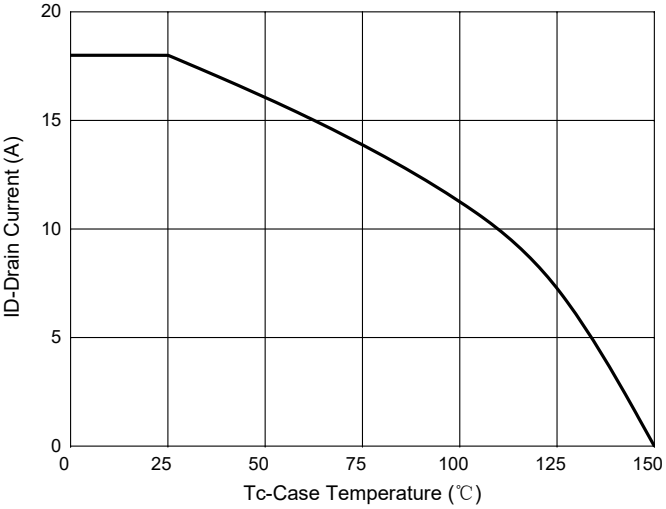
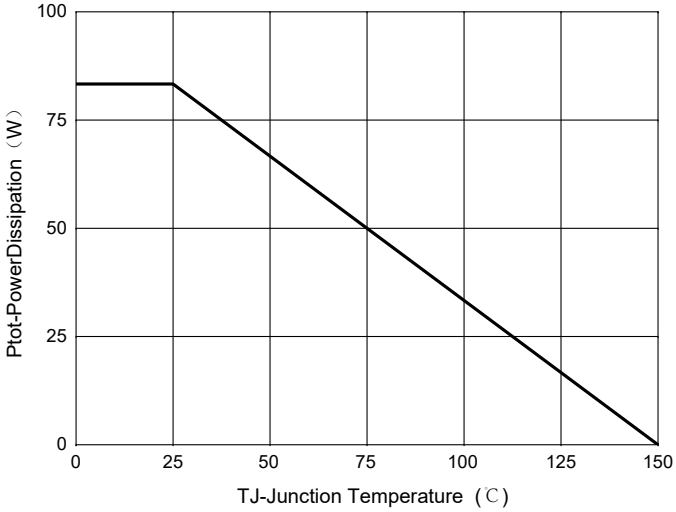


Fig.11-PowerDissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

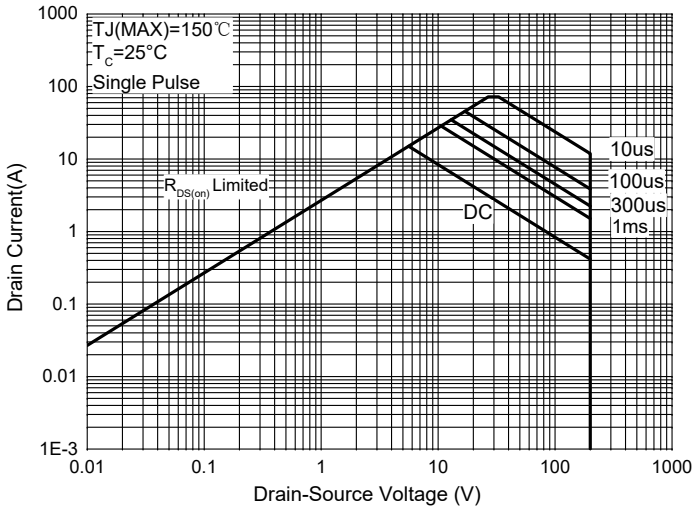
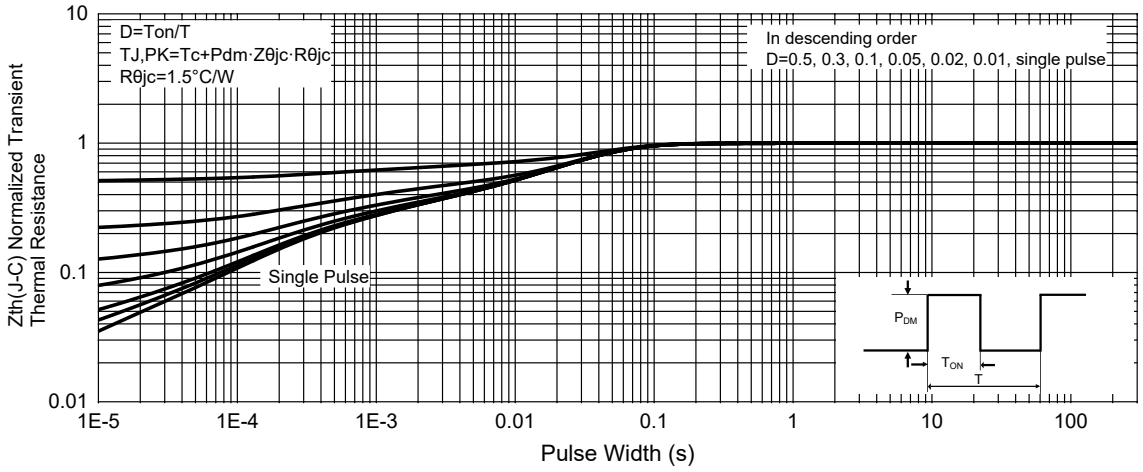


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
MCU18N20A-TP	Tape&Reel: 2.5Kpcs/Reel

Revision History

Datasheet status	Version No	Release date	Update content
New product datasheet	Rev4-1	20230103	