



Micro Commercial Components



Micro Commercial Components
 20736 Marilla Street Chatsworth
 CA 91311
 Phone: (818) 701-4933
 Fax: (818) 701-4939

MCAC80N06Y

N-Channel Power MOSFET

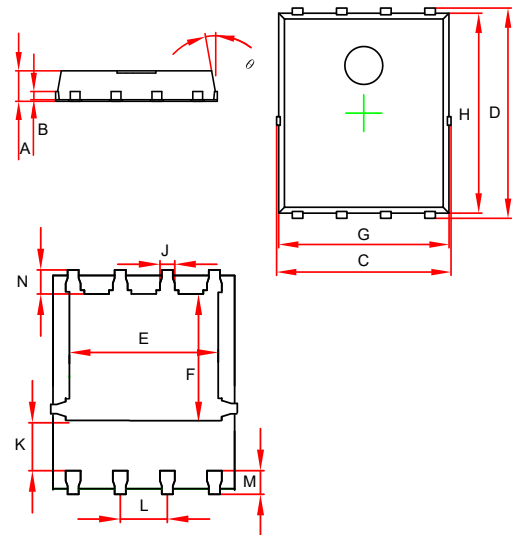
Features

- Trench Power MV MOSFET technology
- Very low on-resistance $R_{DS(ON)}$
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

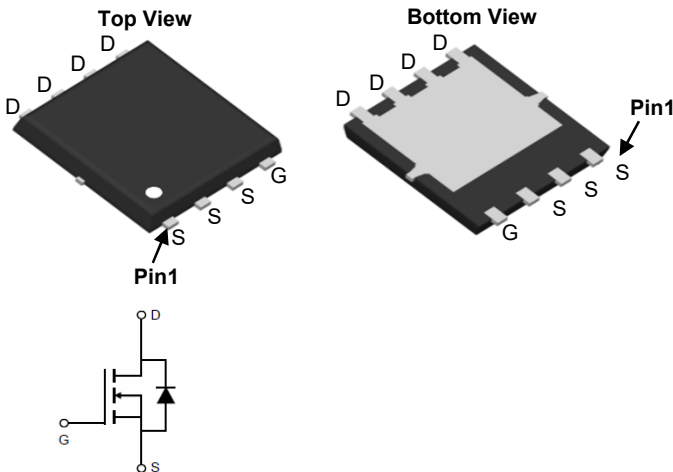
Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	60	V
I_D	Drain Current-Continuous (Note 7)	$T_C = 25^\circ\text{C}$	80
		$T_C = 100^\circ\text{C}$	58
I_{DM}	Pulsed Drain Current (Note 3)	320	A
R_{thJA}	Maximum Junction to Ambient $t \leq 10\text{s}$ (Note1) Steady-State(Note1,4)		15
			43
R_{thJC}	Maximum Junction to Case Steady-State	1.47	$^\circ\text{C/W}$
V_{GS}	Gate-source Voltage	± 20	V
P_{DSM}	Maximum Power Dissipation (Note 1)	$T_C = 25^\circ\text{C}$	85
		$T_C = 100^\circ\text{C}$	34
E_{AS}	Single pulse avalanche energy (Note 3)	450	mj
T_J	Operating Junction Temperature	-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to +150	$^\circ\text{C}$

DFN5060



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.035	.039	0.900	1.000	
B	0.010REF.		0.254REF.		
C	0.193	0.200	4.900	5.100	
D	0.232	0.240	5.900	6.100	
E	0.148	0.163	3.750	4.150	
F	0.130	0.142	3.300	3.600	
G	0.189	0.197	4.800	5.000	
H	0.222	0.230	5.650	5.850	
K	0.047	0.059	1.200	1.500	
J	0.014	0.018	0.350	0.450	
L	0.048	0.052	1.220	1.320	
M	0.020	0.028	0.510	0.710	
N	0.020	0.028	0.510	0.710	

EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS($T_a=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	60	65		V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$ $T_J=55^\circ\text{C}$			1	μA
					5	
I_{GSS}	Gate-Body leakage current	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.1	1.7	2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}$, $I_D=40\text{A}$		3.5	4.2	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$, $I_D=40\text{A}$		4.0	5.2	$\text{m}\Omega$
g_{FS}	Diode Forward Voltage	$V_{DS}=5\text{V}$, $I_D=40\text{A}$	30			S
V_{SD}	Diode Forward Voltage	$I_S=40\text{A}$, $V_{GS}=0\text{V}$		0.85	0.99	V
I_S	Maximum Body-Diode Continuous Current (Note 7)				80	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$		3980		pF
C_{oss}	Output Capacitance			690		pF
C_{rss}	Reverse Transfer Capacitance			24		pF
R_g	Gate resistance	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		2.5		Ω
SWITCHING PARAMETERS						
$Q_g(10\text{V})$	Total Gate Charge	$V_{GS}=10\text{V}$, $V_{DS}=30\text{V}$, $I_D=40\text{A}$		67		nC
$Q_g(4.5\text{V})$	Total Gate Charge			32		nC
Q_{gs}	Gate Source Charge			12		nC
Q_{gd}	Gate Drain Charge			8.5		nC
$t_{D(on)}$	Turn-on Delay Time	$V_{GS}=10\text{V}$, $V_{DS}=15\text{V}$, $R_L=2.5\Omega$, $R_{GEN}=3\Omega$		15		ns
t_r	Turn-on Rise Time			8		ns
$t_{D(off)}$	Turn-off Delay Time			48		ns
t_f	Turn-off Fall Time			12		ns
t_{rr}	Body Diode Reverse Recovery Time	$I_F=I_S$, $di/dt=500\text{A}/\mu\text{s}$		48		ns
Q_{rr}	Body Diode Reverse Recovery charge	$I_F=I_S$, $di/dt=500\text{A}/\mu\text{s}$		60		nC

Note:

- 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 $T_A=25^\circ\text{C}$. The Power dissipation PDSM is based on $R_{\theta JA} t \leq 10\text{s}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
- The power dissipation PD is based on $T_J(\text{MAX})=175^\circ\text{C}$, using junction - to - case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
- Single pulse width limited by junction temperature $T_J(\text{MAX})=175^\circ\text{C}$.
- The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.
- The static characteristics in Figures 1 to 6 are obtained using $<300\text{ns}$ pulses, duty cycle 0.5% max.
- These curves are based on the junction - to - case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_J(\text{MAX})=175^\circ\text{C}$. The SOA curve provides a single pulse rating.
- The maximum current rating is package limited.

Typical Electrical and Thermal Characteristics

Fig 1: Output Characteristics

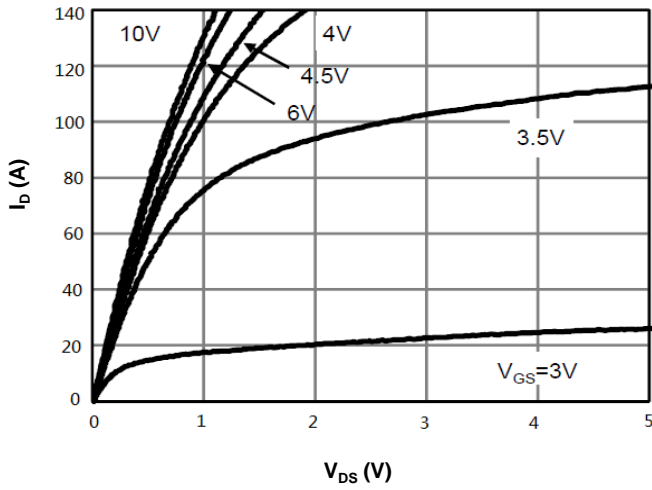


Fig 2: Transfer Characteristics

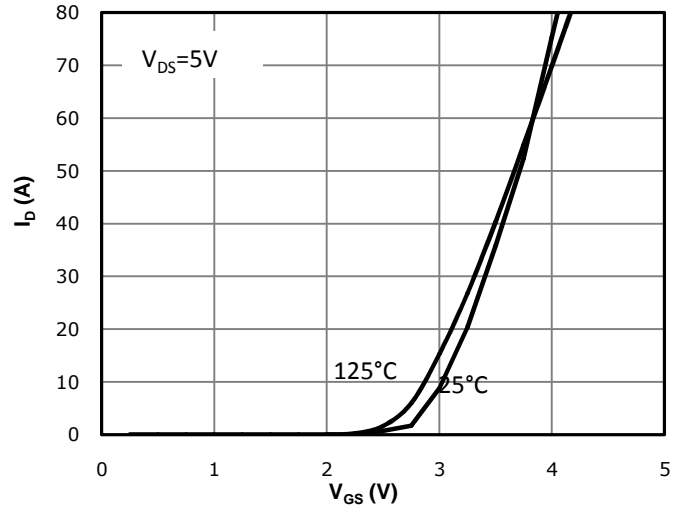


Fig 3: Rds(on) vs Drain Current and Gate Voltage

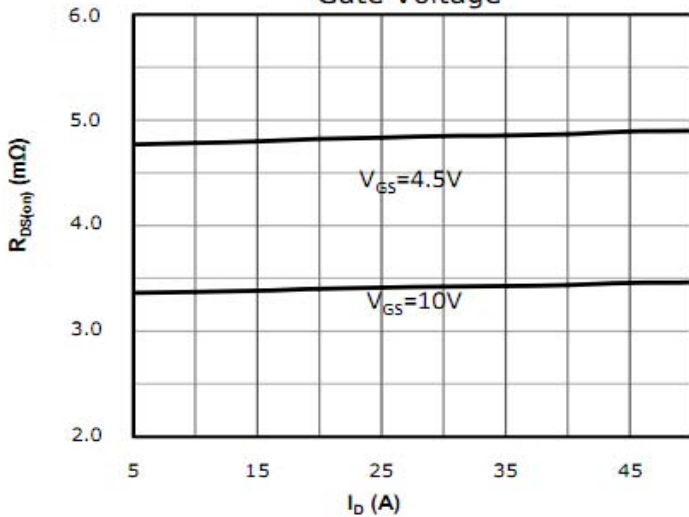


Fig 4: Capacitance Characteristics

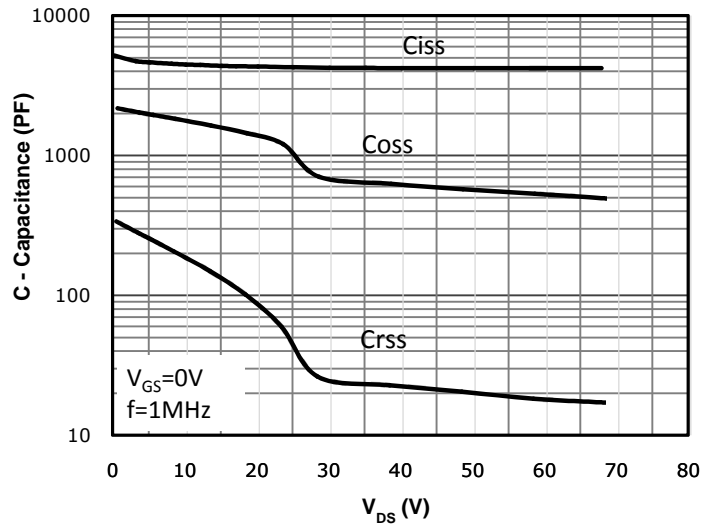


Fig 5: Rds(on) vs. Temperature

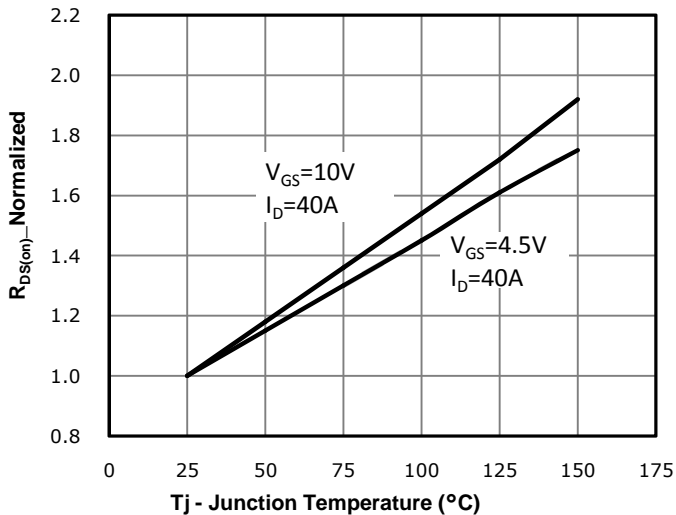
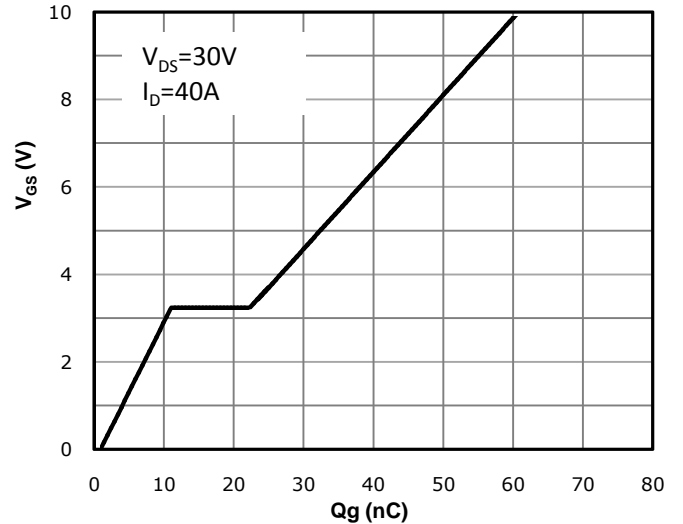


Fig 6: Gate Charge Characteristics



Typical Electrical and Thermal Characteristics

Fig 7: Body-diode Forward Characteristics

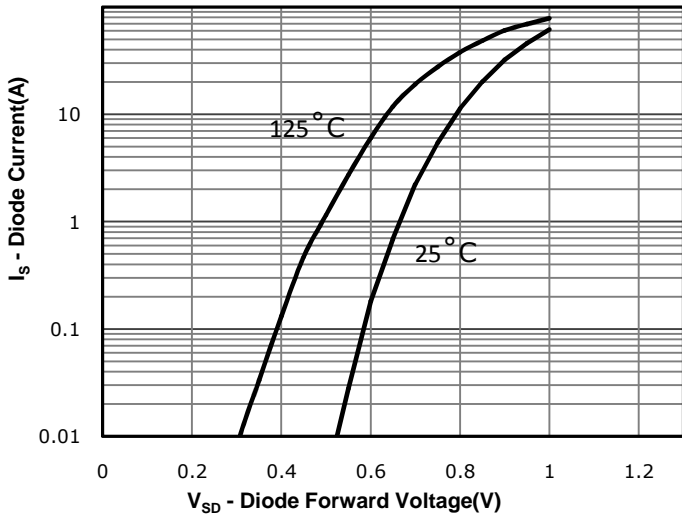


Fig 8: Drain Current Derating

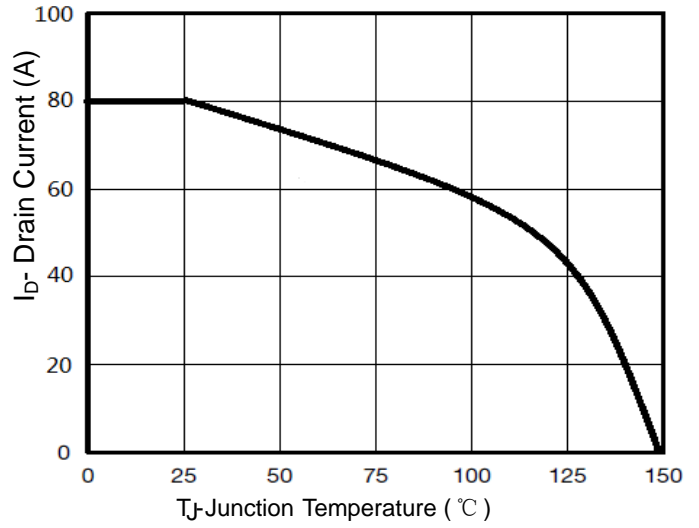


Fig 9: Power Dissipation

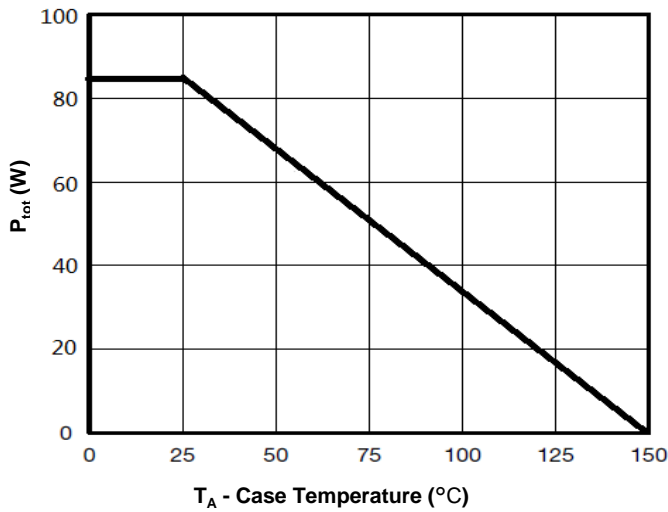


Fig 10: Safe Operation Area

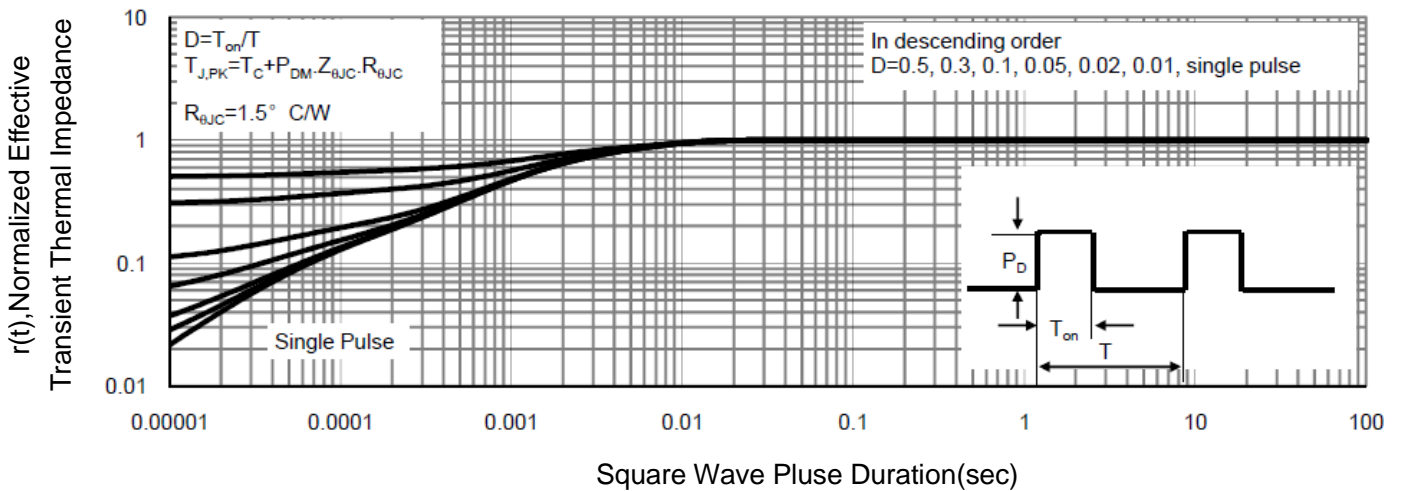
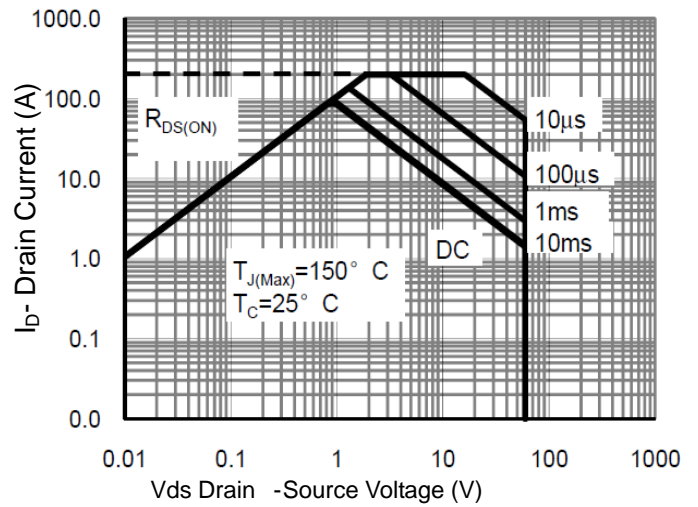


Fig 11: Normalized Maximum Transient Thermal Impedance



Micro Commercial Components

Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:5Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

IMPORTANT NOTICE

Micro Commercial Components Corp. reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp .** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp .** and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

CUSTOMER AWARENESS

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.