



Micro Commercial Components



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

MCB150N06YB

N-Channel Enhancement Mode Field Effect Transistor

Features

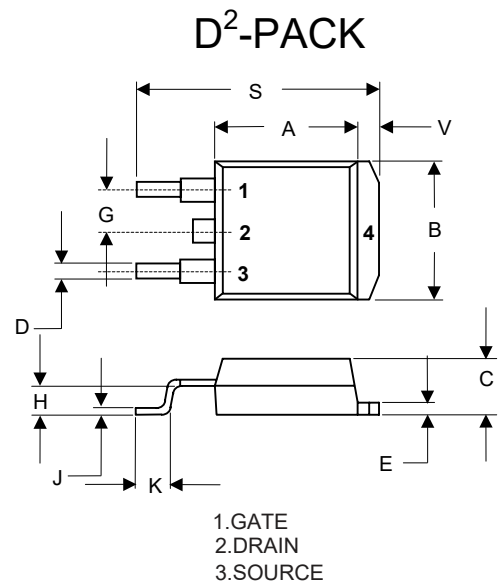
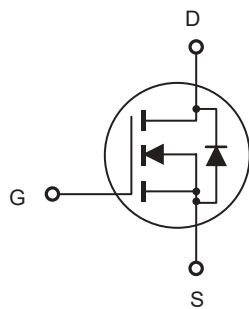
- High density cell design for ultra low $R_{ds(on)}$
- Fully characterized avalanche voltage and current
- Halogen free available upon request by adding suffix "-HF"
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ^C	I_D	$T_C=25^\circ C$	150
		$T_C=100^\circ C$	105
Pulsed Drain Current ^B	I_{DM}	500	A
Avalanche energy $L=0.5mH$ ^B	E_{AS}	550	mJ
Power Dissipation ^A	P_{DSM}	$T_C=25^\circ C$	187
		$T_C=100^\circ C$	94
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	°C

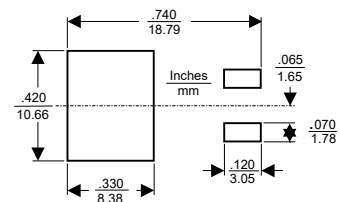
Thermal Characteristics				
Parameter	Symbol	Maximum	Units	
Maximum Junction-to-Case	Steady-State $R_{\theta JC}$	0.71	0.80	°C/W

Internal Block Diagram



DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.320	.359	8.13	9.14	
B	.380	.411	9.65	10.45	
C	.160	.190	4.06	4.83	
D	.020	.035	0.51	0.89	
E	.045	.055	1.14	1.40	
G	.095	.105	2.41	2.67	
H	.096	.120	2.43	3.03	
J	.014	.021	0.35	0.53	
K	.090	.110	2.29	2.79	
S	.575	.625	14.60	15.80	
V	.045	.055	1.14	1.40	

SUGGESTED SOLDER PAD LAYOUT



Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0V	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V T _J =55°C			1 5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =50A T _J =125°C		4.6 7.7	5.5 9.2	mΩ
g _{FS}	Diode Forward Voltage	V _{DS} =5V, I _D =50A	80			S
V _{SD}	Diode Forward Voltage	I _S =50A, V _{GS} =0V		0.85	0.99	V
I _S	Maximum Body-Diode Continuous Current ^C				150	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, f=1MHz		3800		pF
C _{oss}	Output Capacitance			430		pF
C _{rss}	Reverse Transfer Capacitance			190		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		2.6		Ω
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =50A		69		nC
Q _{gs}	Gate Source Charge			33		nC
Q _{gd}	Gate Drain Charge			15		nC
t _{D(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =30V, R _L =2.5Ω, R _{GEN} =3Ω		18		ns
t _r	Turn-on Rise Time			35		ns
t _{D(off)}	Turn-off Delay Time			44		ns
t _f	Turn-off Fall Time			23		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =50A, di/dt=500A/us		53		ns
Q _{rr}	Body Diode Reverse Recovery charge	I _F =50A, di/dt=500A/us		98		nC

A. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The Power dissipation P_{DSM} is based on R_{θJA} ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.

B. Single pulse width limited by junction temperature T_{J(MAX)}=175° C.

C. The maximum current rating is package limited.

Typical Characteristics

Fig 1: Output Characteristics

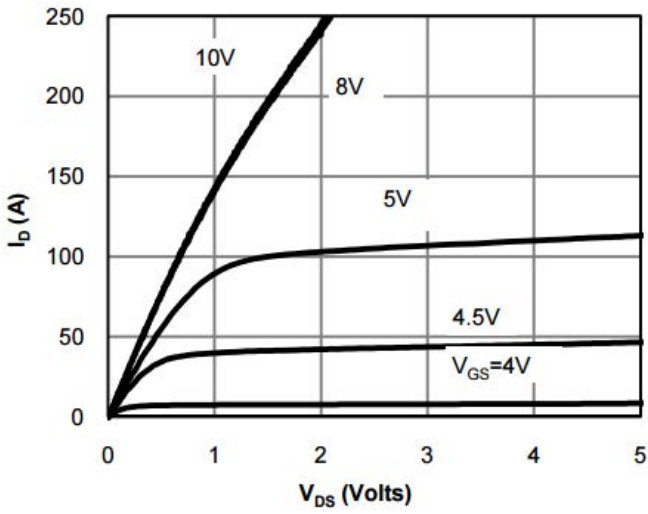


Fig 2: Transfer Characteristics

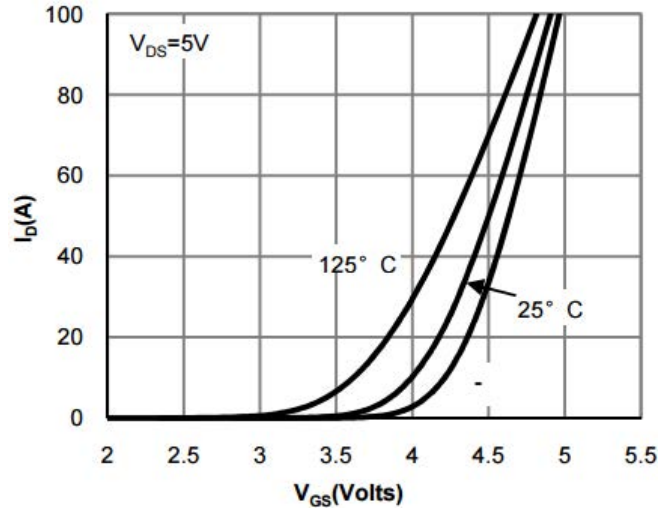


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

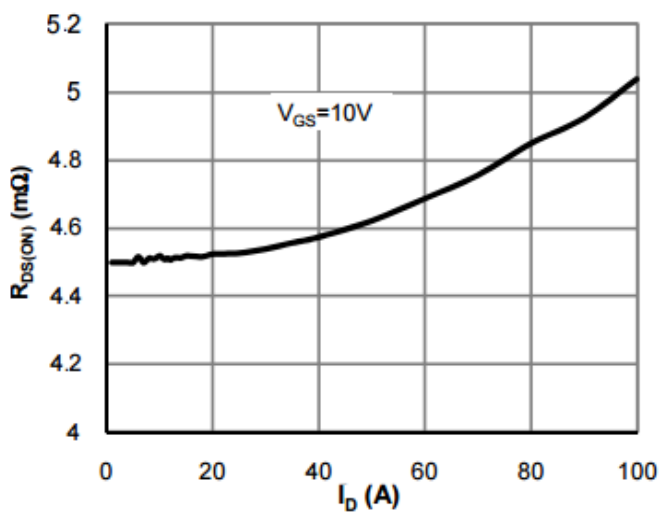


Fig 4: $R_{DS(on)}$ vs Gate Voltage

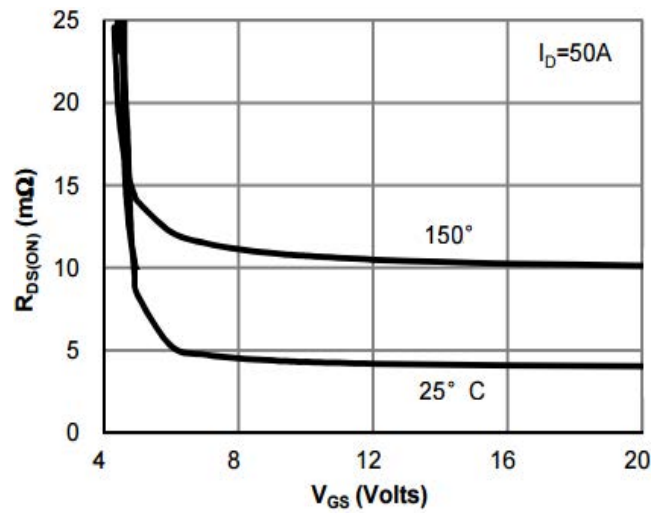


Fig 5: $R_{DS(on)}$ vs. Temperature

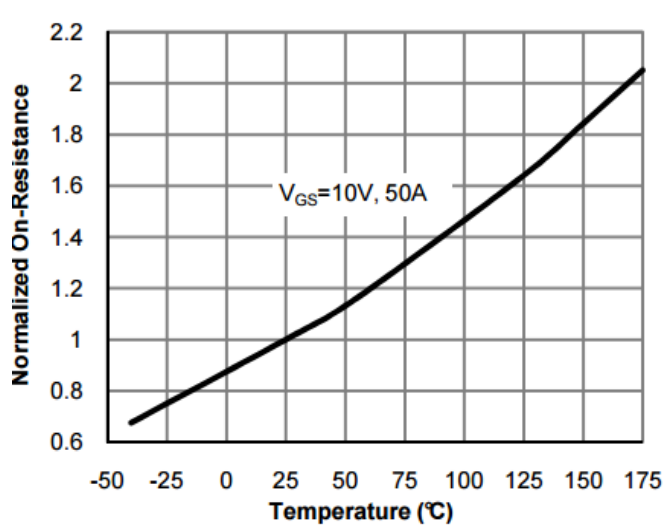


Fig 6: Capacitance Characteristics

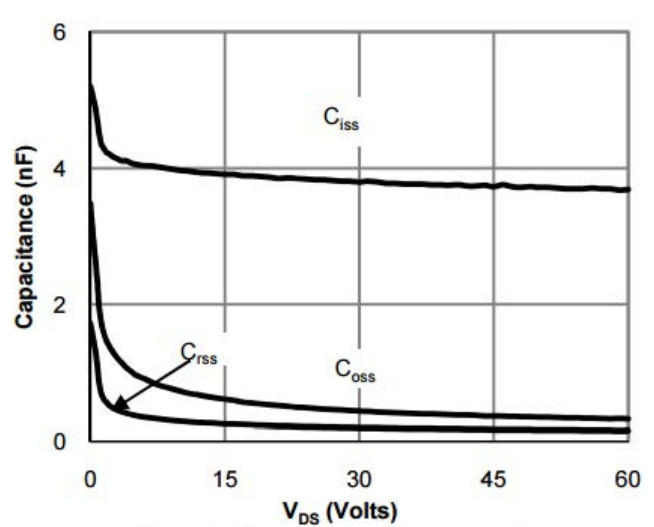


Fig 7: Gate Charge Characteristics

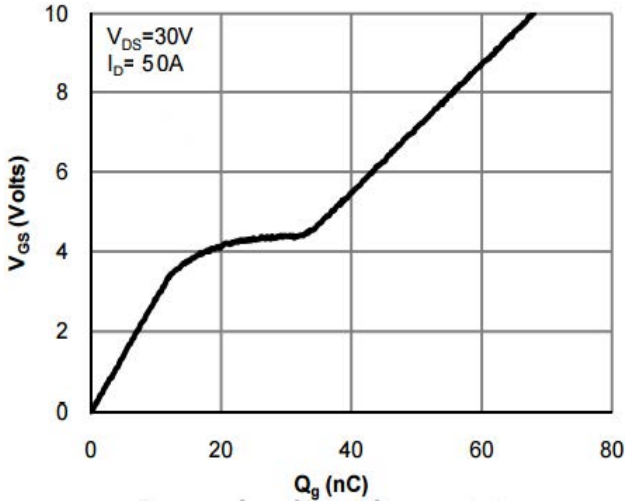


Fig 8: Body-diode Forward Characteristics

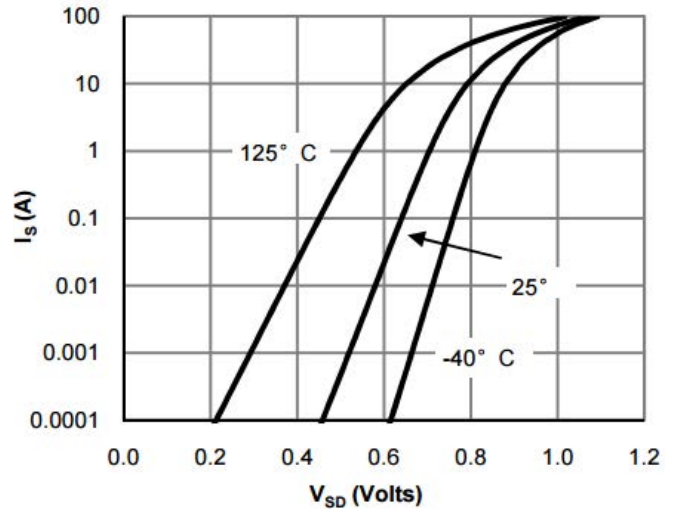


Fig 9: Power Dissipation

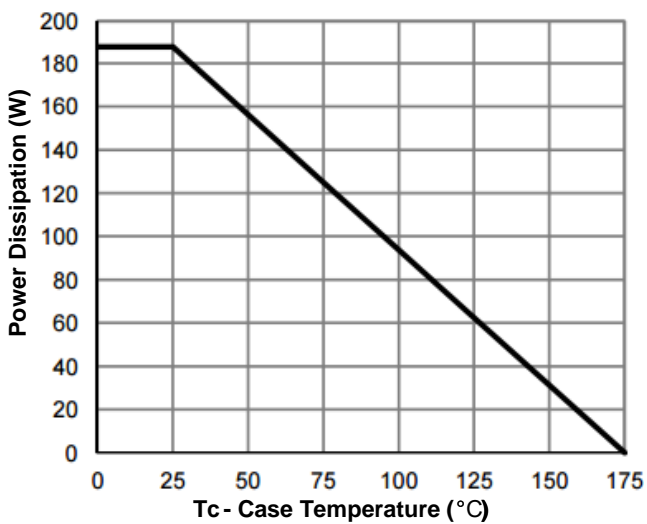


Fig 10: Drain Current Derating

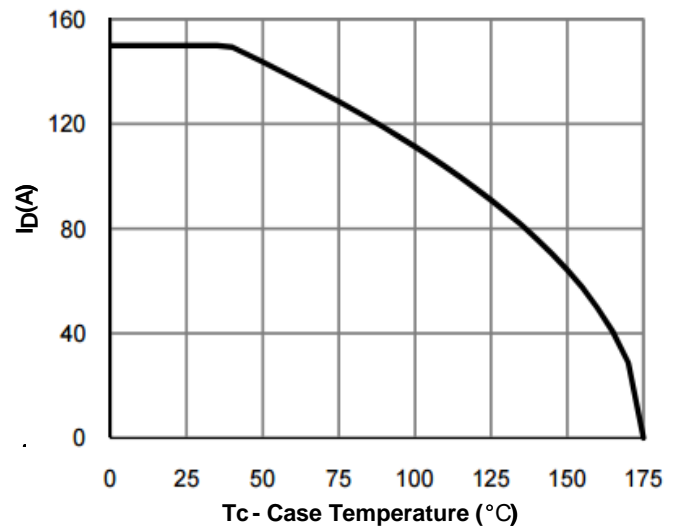


Fig 11: Safe Operating Area

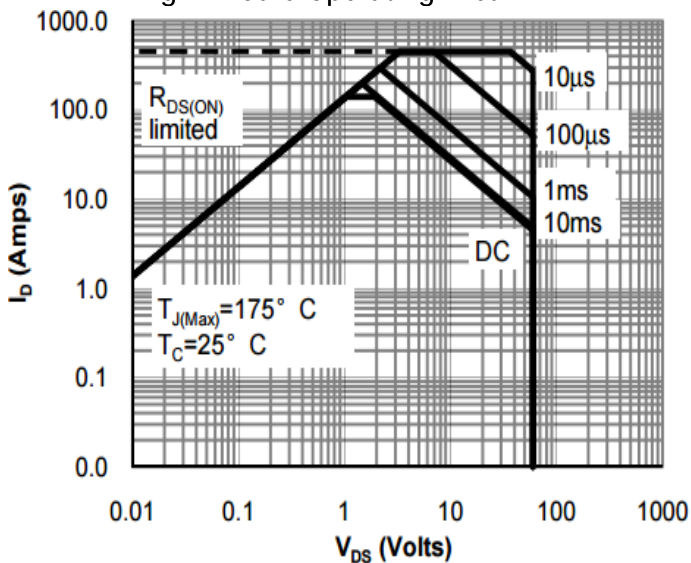
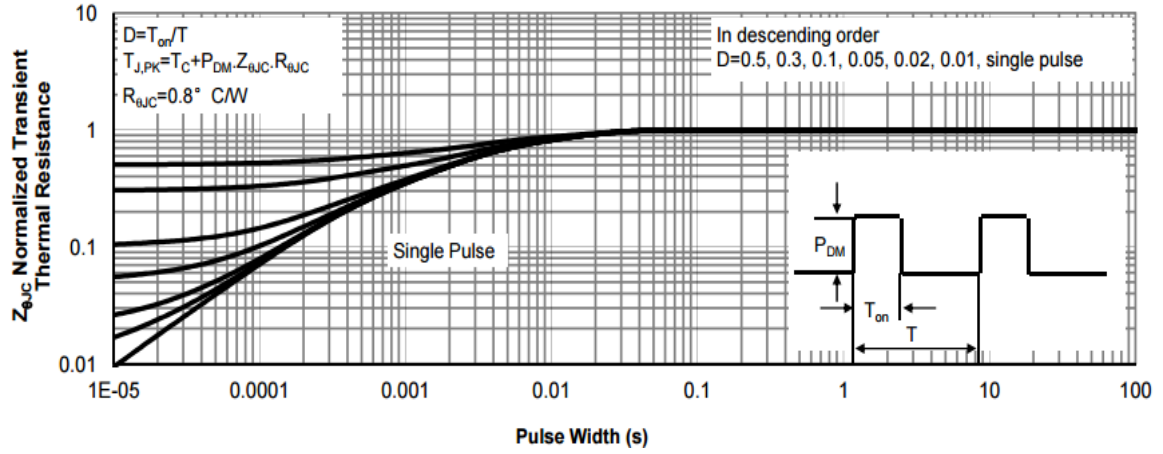


Fig 12: Max. Transient Thermal Impedance





Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel
Part Number-BP	Tube: 5Kpcs/Ctn

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

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