

Features

- High Density Cell Desihn for Ultra Low $R_{DS(on)}$
- Fully Characterized Avalanche Voltage and Current
- Good Stability and Uniformity with High E_{AS}
- Excellent Package for Good Heat Dissipation
- ESD Protected up to 800V (HBM)
- 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

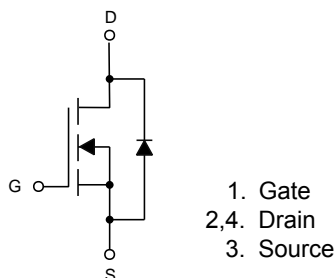
- Operating Junction Temperature Range : -55°C to $+175^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+175^{\circ}\text{C}$
- Thermal Resistance: 0.8°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^(Note 1)	I_D	$T_C=25^{\circ}\text{C}$	150 A
		$T_C=100^{\circ}\text{C}$	105 A
Pulsed Drain Current ^(Note 2)	I_{DM}	500	A
Single Pulse Avalanche Energy ^(Note 2)	E_{AS}	550	mJ
Total Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$	187 W
		$T_C=100^{\circ}\text{C}$	94 W

Note:

- 1.The Maximum Current Rating is Package Limited.
- 2.Single Pulse Width Limited by Junction Temperature $T_{J(MAX)}=175^{\circ}\text{C}$.

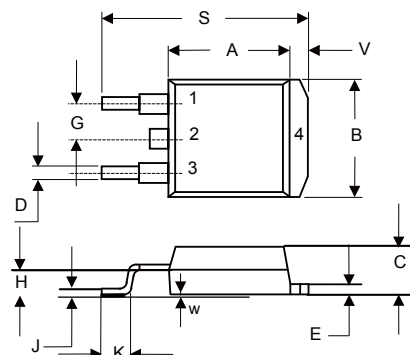
Internal Structure



Marking: MCB150N06YB

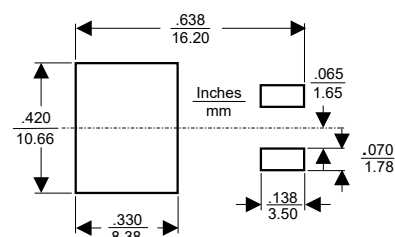
N-CHANNEL MOSFET

D²-PAK(TO-263)



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.331	0.370	8.40	9.40	
B	0.378	0.417	9.60	10.60	
C	0.165	0.189	4.20	4.80	
D	0.027	0.037	0.68	0.94	
E	0.045	0.055	1.14	1.40	
G	0.010		2.54		TYP.
H	0.096	0.134	2.43	3.40	
J	0.011	0.025	0.28	0.64	
K	0.071	0.131	1.80	3.32	
S	0.575	0.625	14.60	15.87	
V	0.042	0.058	1.07	1.47	
W	0.000	0.010	0.00	0.25	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
		$V_{DS}=60V, V_{GS}=0V, T_J=55^\circ C$			5	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$		4.6	5.5	m Ω
		$V_{GS}=10V, I_D=50A, T_J=125^\circ C$		7.7	9.2	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=50A$	80			S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=50A$		0.85	0.99	V
Continuous Body Diode Current	I_S				150	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		3800		pF
Output Capacitance	C_{oss}			430		
Reverse Transfer Capacitance	C_{rss}			190		
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		2.6		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=50A$		69		nC
Gate-Source Charge	Q_{gs}			33		
Gate-Drain Charge	Q_{gd}			15		
Reverse Recovery Charge	Q_{rr}	$I_F=50A, di/dt=500A/\mu s$		98		ns
Reverse Recovery Time	t_{rr}			53		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=30V, R_L=2.5\Omega, R_{GEN}=3\Omega$		18		ns
Turn-On Rise Time	t_r			35		
Turn-Off Delay Time	$t_{d(off)}$			44		
Turn-Off Fall Time	t_f			23		

Curve Characteristics

Fig. 1 - Output Characteristics

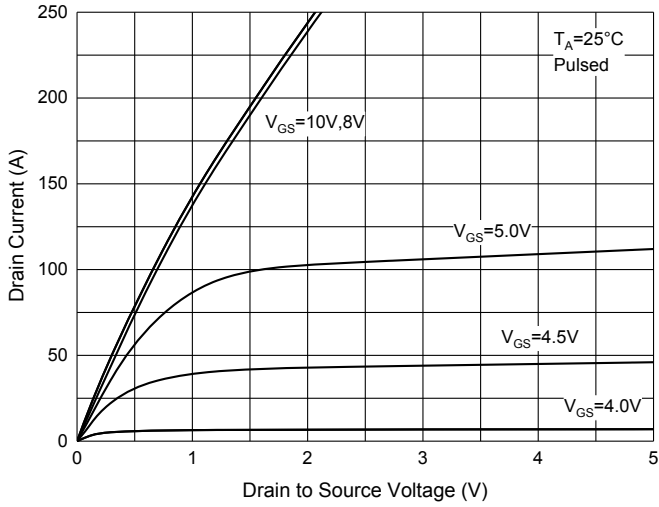


Fig. 2 - $R_{DS(ON)}$ —Temperature

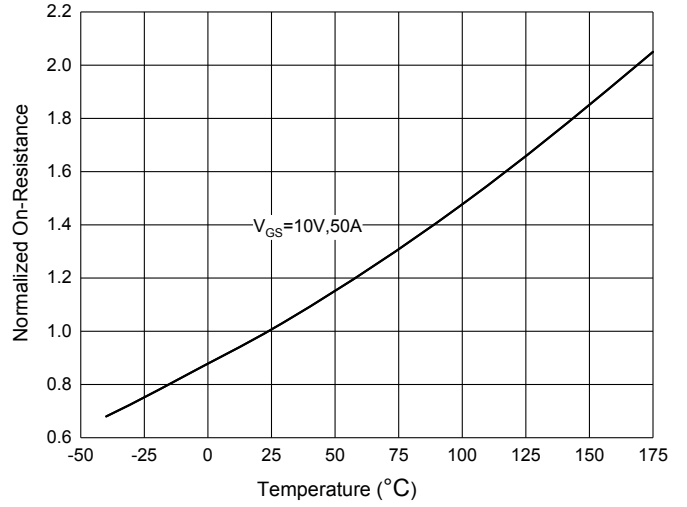


Fig. 3 - $R_{DS(ON)}$ — I_D

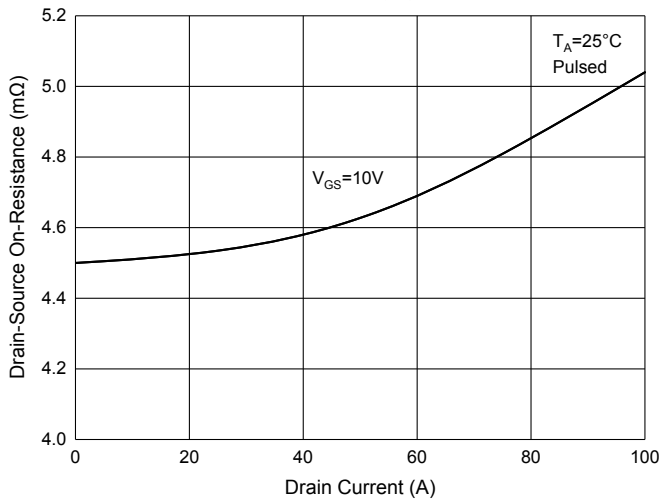
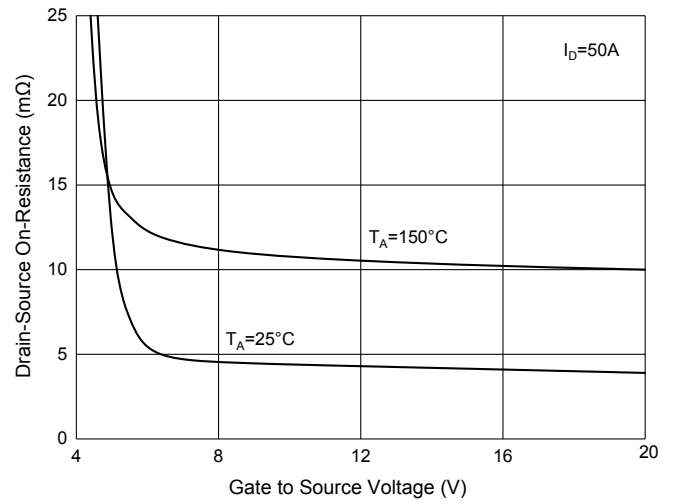


Fig. 4 - $R_{DS(ON)}$ — V_{GS}



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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