

BMO10N380

100V N-channel MOSFET

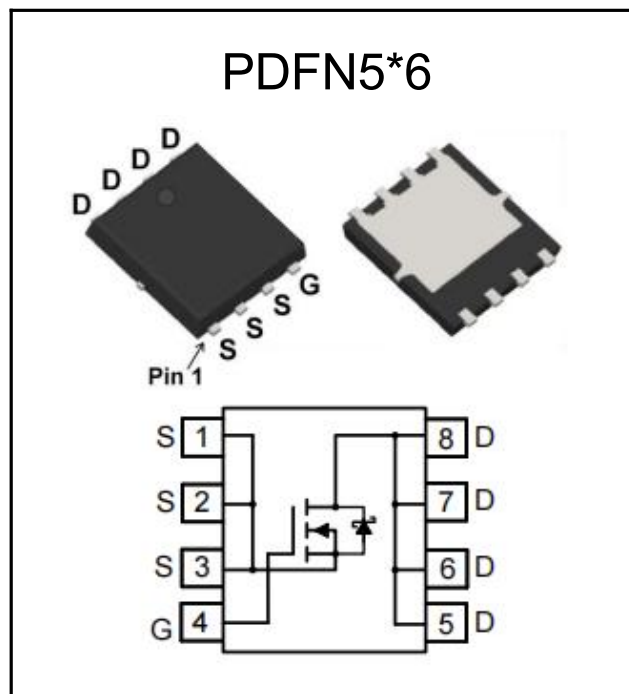
Features

- Fast Switching
- Low $R_{DS(on)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

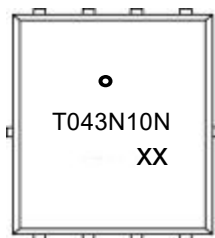
Application

- Power Switching Application
- Motor Control
- UPS

Package



Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
BMO10N380	PDFN5*6	T043N10N	5K	Tape and reel

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate - Source Voltage		± 20	
I_D	Drain Current ¹	$T_C=25^\circ\text{C}$	113	A
		$T_C=100^\circ\text{C}$	71	
I_{DM}	Drain Current-Pulse		450	A
E_{AS}	Single Pulse Avalanche Energy ²		578	mJ
P_D	Power Dissipation	$T_C=25^\circ\text{C}$	104	W



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Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Units
T_J	Junction Temperature(Max)	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55 to +150	
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.2	$^{\circ}\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	44	

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250uA	100	–	–	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100V, V _{GS} =0V	–	–	1	uA
Gate- Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	–	–	±100	nA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} =250uA	2	3	4	V
Static Drain-source On Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	–	3.5	4.3	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =10A	–	48	–	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f = 1MHz	–	3055	–	pF
Output capacitance	C _{oss}		–	1378	–	
Reverse transfer capacitance	C _{rss}		–	19	–	
Gate Resistance	R _g	V _{GS} = V _{DS} =0V,f = 1MHz	–	1.6	–	Ω
Switching Characteristics						
Turn-on delay time	T _{d(on)}	V _{DD} =50V, V _{GS} =10V, I _D =20A, R _G =3Ω	–	9.3	–	nS
Turn-on Rise time	T _r		–	15	–	
Turn -Off Delay Time	T _{d(off)}		–	29	–	
Turn -Off Fall time	T _f		–	19	–	
Gate to Source Charge	Q _{gs}	V _{DS} =50V, V _{GS} =10V, I _D =20A	–	9.3	–	nC
Gate to Drain Charge	Q _{gd}		–	8.4	–	
Gate to Drain Charge	Q _g		–	44	–	
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} =0V,I _S =2A	–	–	1.2	V
Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=100A/us	–	65	–	nS
Reverse Recovery Charge	Q _{rr}		–	138	–	nC

Notes:(1) The maximum current rating is limited by package.And device mounted on a large heatsink

(2) $V_{DD}=50V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^{\circ}\text{C}$.

(3)Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.



Electrical Characteristics

Figure 1: Output Characteristics

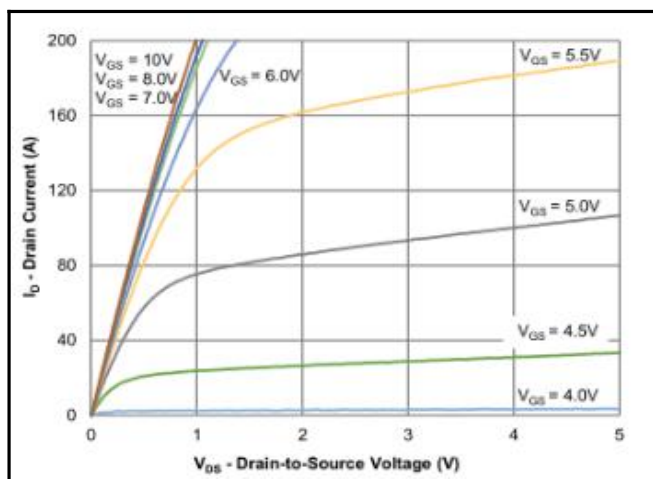


Figure 2: Transfer Characteristics

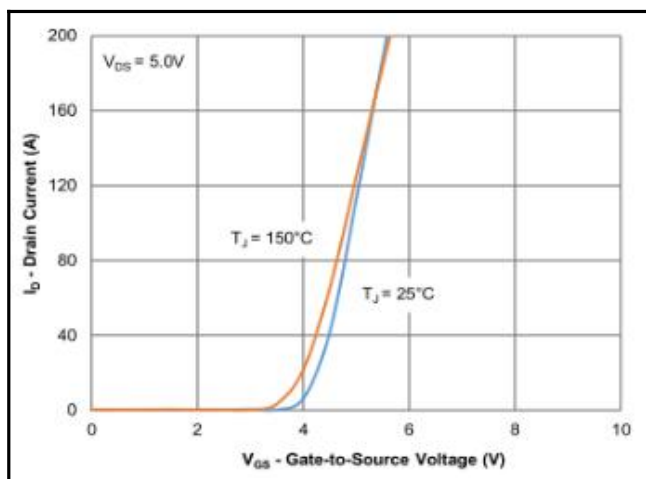


Figure 3: $R_{DS(ON)}$ vs I_D

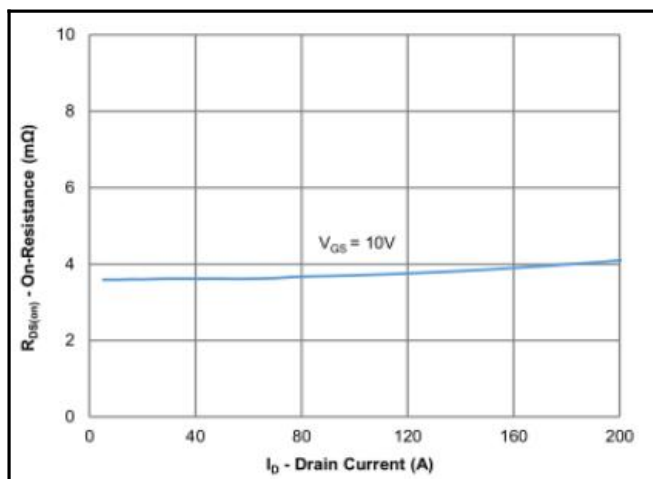


Figure 4: R_{DS} vs V_{GS}

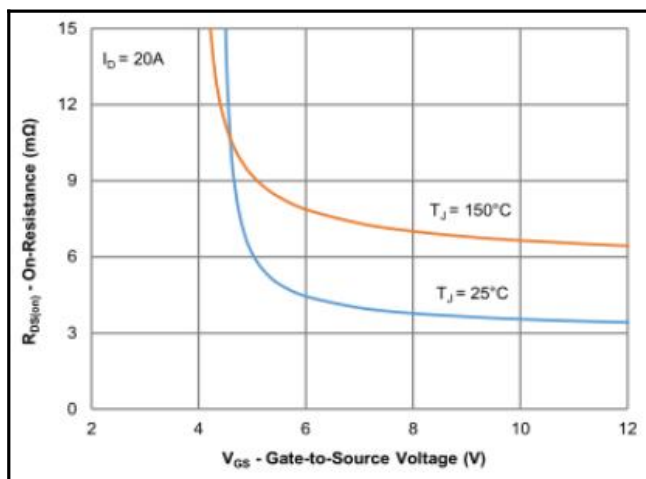


Figure 5: I_S vs V_{SD}

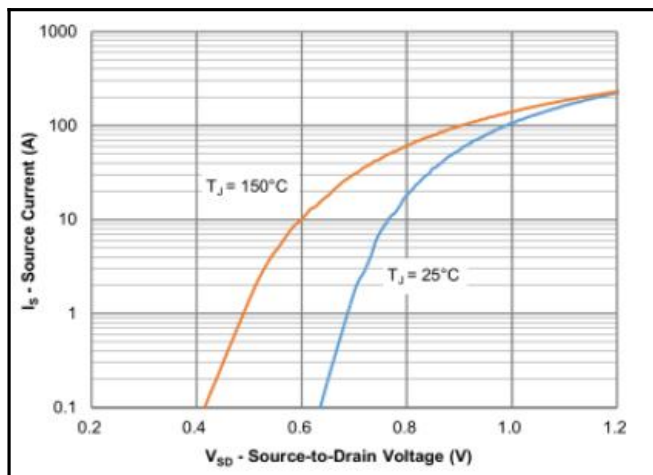
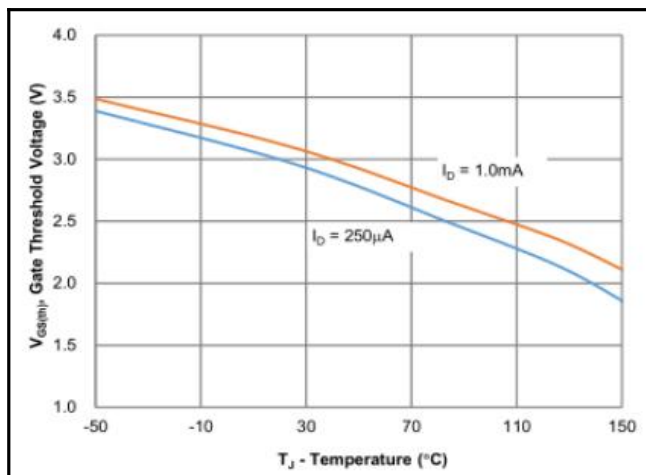


Figure 6: Threshold Voltage



Electrical Characteristics

Figure 7: Gate Charge Characteristics

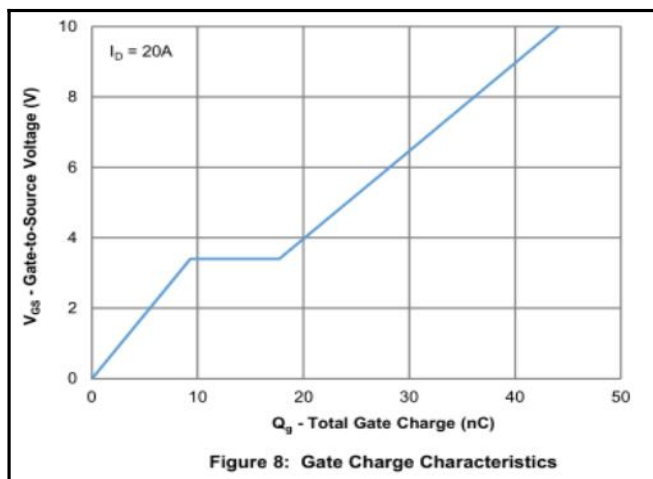


Figure 8: Power Derating

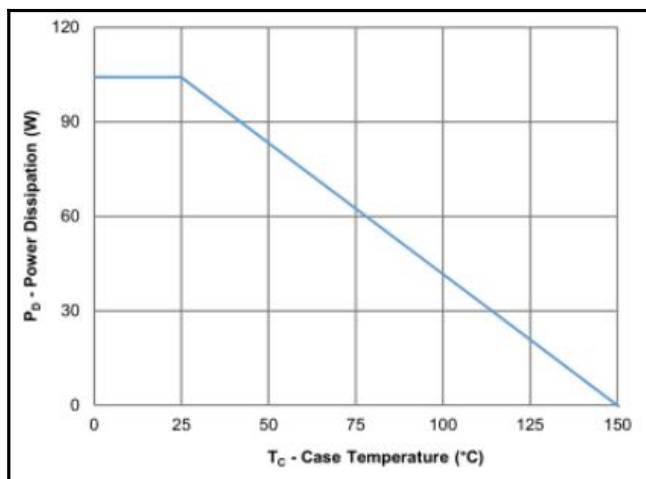


Figure 9: Capacitance vs V_{DS}

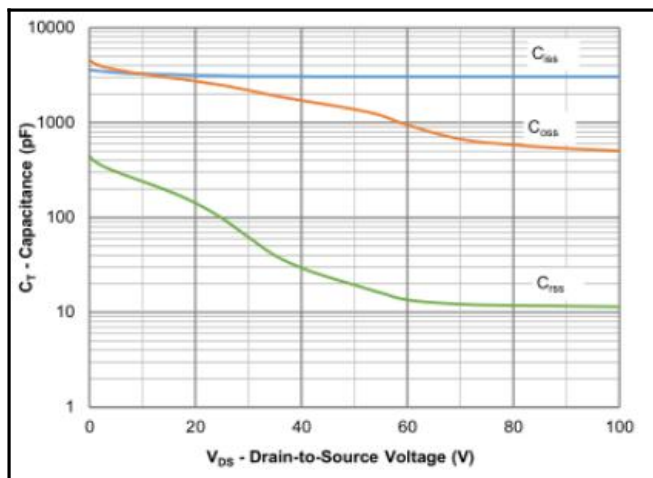


Figure 10: Threshold Voltage

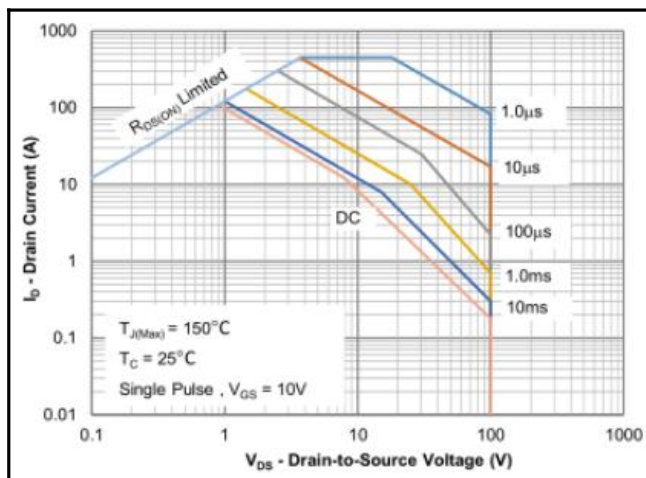
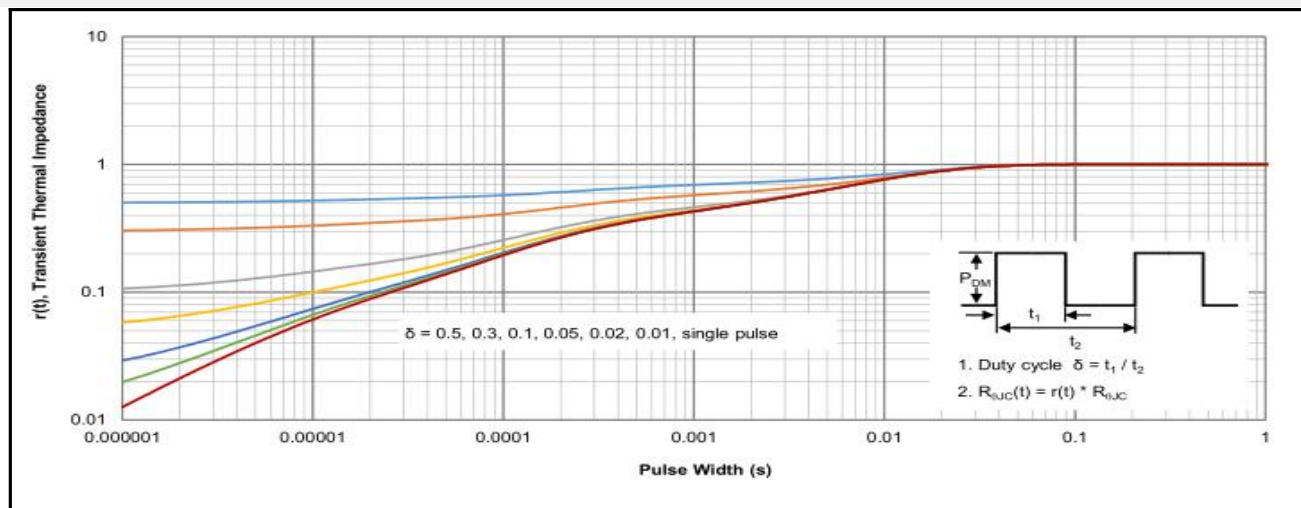
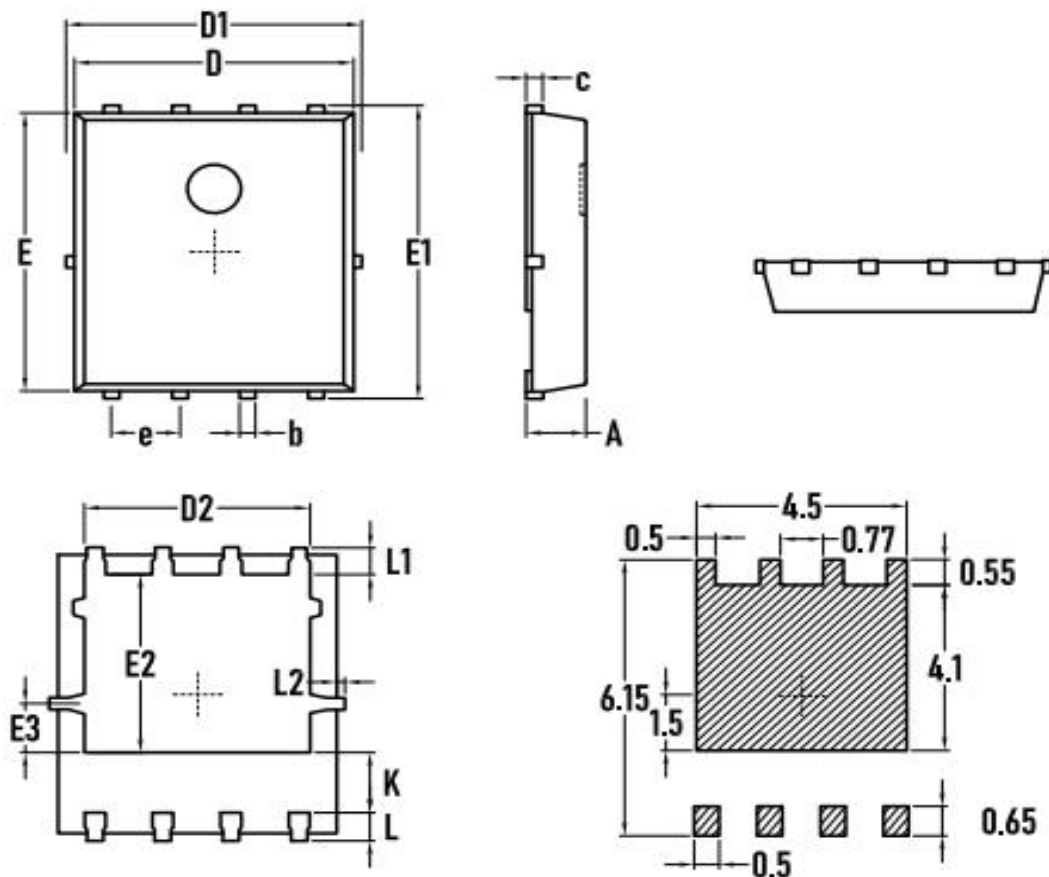


Figure 11: Normalized Transient Thermal Impedance vs Pulse Width



Packaging Tape -PDFN5x6



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
b	0.25	0.35	0.50
C	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
e	—	1.27	—
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
K	1.00	1.30	1.50
L	0.40	0.55	0.70
L1	—	0.65	—
L2	—	—	0.15

