

100V 18mΩ N-Ch Power MOSFET

Features

- Low Gate Charge
- High Current Capability
- 100% UIS Tested, 100% R_g Tested

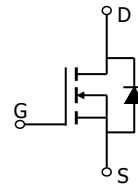
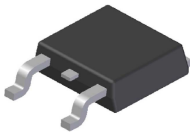
Applications

Product Summary (BM1018AK)

Parameter	Value	Unit
V _{DS}	100	V
V _{GS(th)_Typ}	1.9	V
I _D (@ V _{GS} = 10V) ⁽¹⁾	40	A
R _{DS(on)_typ} (@ V _{GS} = 10V)	14	mΩ
R _{DS(on)_typ} (@ V _{GS} = 4.5V)	19	mΩ

BM1018AH导通电阻比BM1018AK大3~4毫欧,结电容略小

T0252 TOP View

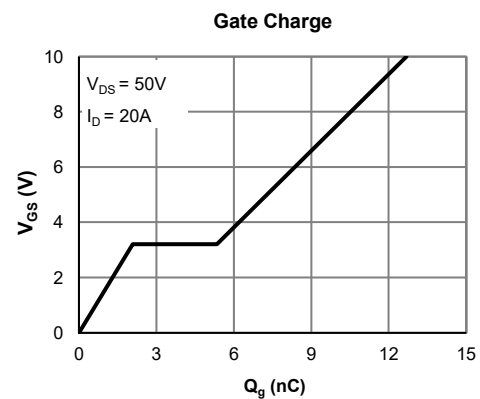
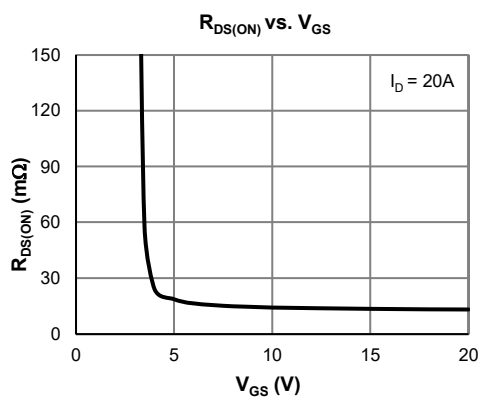


Ordering Information

Device	Package	# of Pins	Marking	RDS(on)	T _J (°C)	Media	Quantity (pcs)
BM1018AH	TO252-3L	3	1018AH	18 m	-55 to 150	Reel	2500
BM1018AK	TO252-3L	3	1018AK	14 m	-55 to 150	Reel	2500

Absolute Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DS}	100	V
Gate-to-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ⁽¹⁾	I _D	T _C = 25°C	40
		T _C = 100°C	25
Pulsed Drain Current ⁽²⁾	I _{DM}	116	A
Avalanche Current ⁽³⁾	I _{AS}	4.3	A
Avalanche Energy ⁽³⁾	E _{AS}	0.92	mJ
Power Dissipation ⁽⁴⁾	P _D	T _C = 25°C	52
		T _C = 100°C	21
Junction & Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C



Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80\text{V}, V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$			1.0 5.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.2	1.9	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$		18.0	21	$\text{m}\Omega$
	$R_{DS(ON)}$	$V_{GS} = 4.5\text{V}, I_D = 6\text{A}$		23.5	27.0	$\text{m}\Omega$
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{V}, I_D = 20\text{A}$		48		S
Diode Forward Voltage	V_{SD}	$I_S = 1\text{A}, V_{GS} = 0\text{V}$		0.7	1.0	V
Diode Continuous Current	I_S	$T_C = 25^\circ\text{C}$			52	A
DYNAMIC PARAMETERS ⁽⁵⁾						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 50\text{V}, f = 1\text{MHz}$		769		pF
Output Capacitance	C_{oss}			171		pF
Reverse Transfer Capacitance	C_{rss}			5.1		pF
Gate Resistance	R_g	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$		1.9		Ω
SWITCHING PARAMETERS ⁽⁵⁾						
Total Gate Charge (@ $V_{GS} = 10\text{V}$)	Q_g	$V_{GS} = 0 \text{ to } 10\text{V}$ $V_{DS} = 50\text{V}, I_D = 10\text{A}$		12.7		nC
Total Gate Charge (@ $V_{GS} = 6.0\text{V}$)	Q_g			6.7		nC
Gate Source Charge	Q_{gs}			2.1		nC
Gate Drain Charge	Q_{gd}			3.3		nC
Turn-On DelayTime	$t_{D(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 50\text{V}$ $R_L = 2.5\Omega, R_{GEN} = 6\Omega$		4.3		ns
Turn-On Rise Time	t_r			5.1		ns
Turn-Off DelayTime	$t_{D(off)}$			16.7		ns
Turn-Off Fall Time	t_f			8.7		ns
Body Diode Reverse Recovery Time	t_{rr}		$I_F = 15\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$		39	
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F = 15\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$		30		nC

Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	42	50	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.8	2.4	$^\circ\text{C}/\text{W}$

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under $T_{J_Max} = 150^\circ\text{C}$.
3. This single-pulse measurement was taken under the following condition [$L = 100\mu\text{H}, V_{GS} = 10\text{V}, V_{DS} = 50\text{V}$] while its value is limited by $T_{J_Max} = 150^\circ\text{C}$.
4. The power dissipation P_D is based on $T_{J_Max} = 150^\circ\text{C}$.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical & Thermal Characteristics

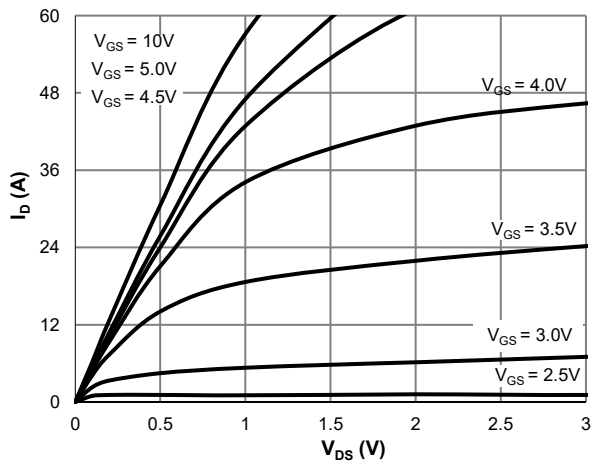


Figure 1: Saturation Characteristics

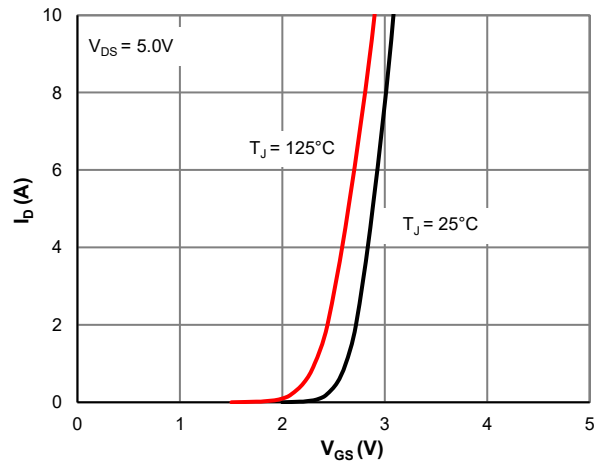


Figure 2: Transfer Characteristics

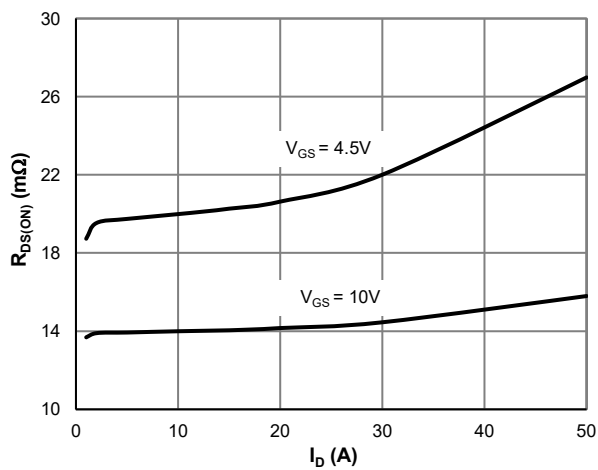


Figure 3: $R_{DS(ON)}$ vs. Drain Current

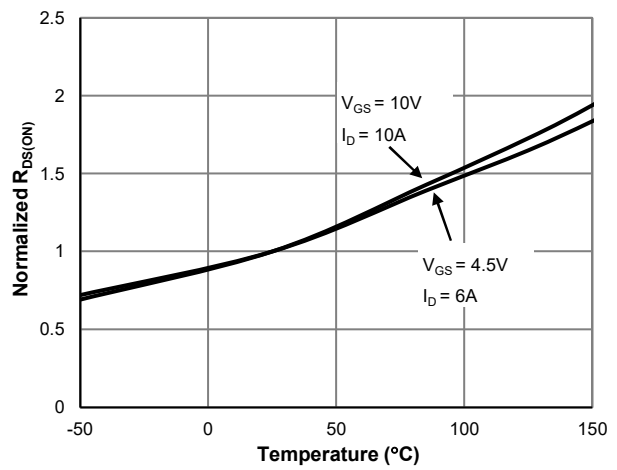


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

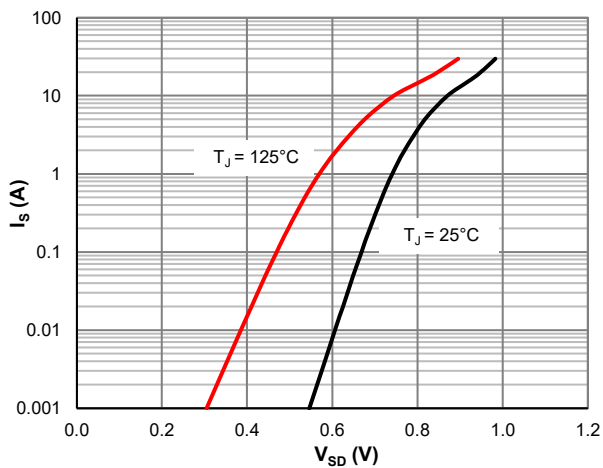


Figure 5: Body-Diode Characteristics

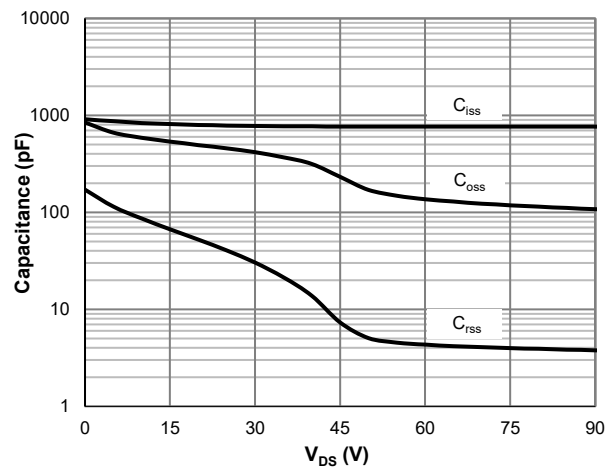


Figure 6: Capacitance Characteristics

Typical Electrical & Thermal Characteristics

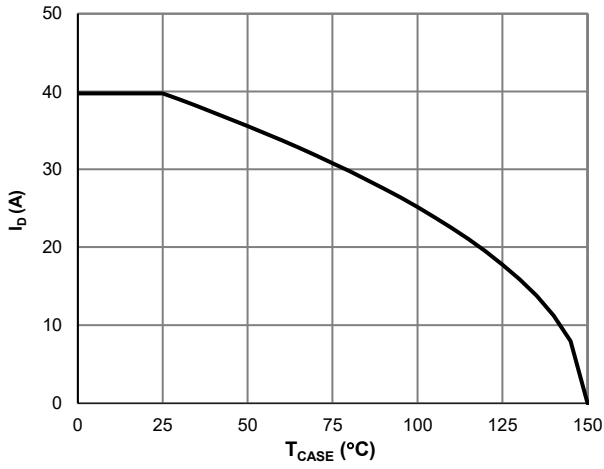


Figure 7: Current De-rating

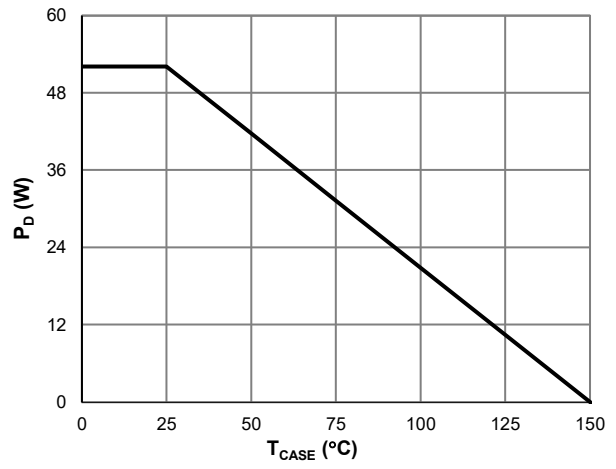


Figure 8: Power De-rating

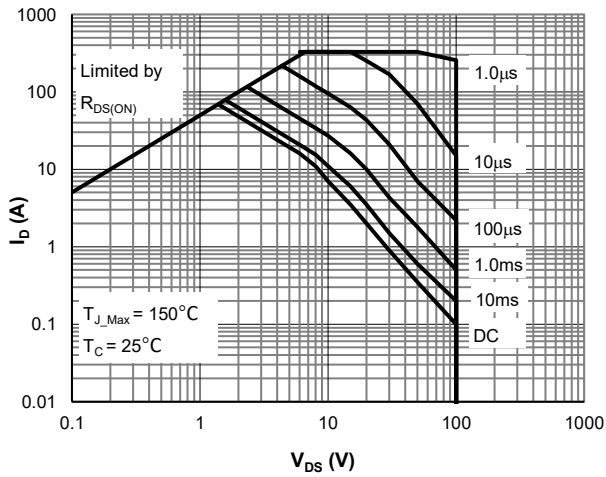


Figure 9: Maximum Safe Operating Area

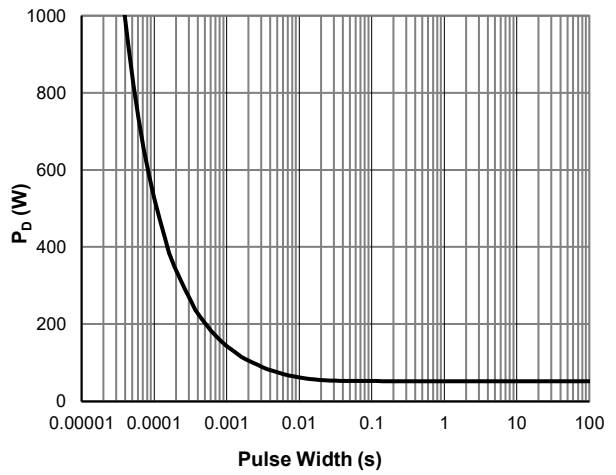


Figure 10: Single Pulse Power Rating, Junction-to-Case

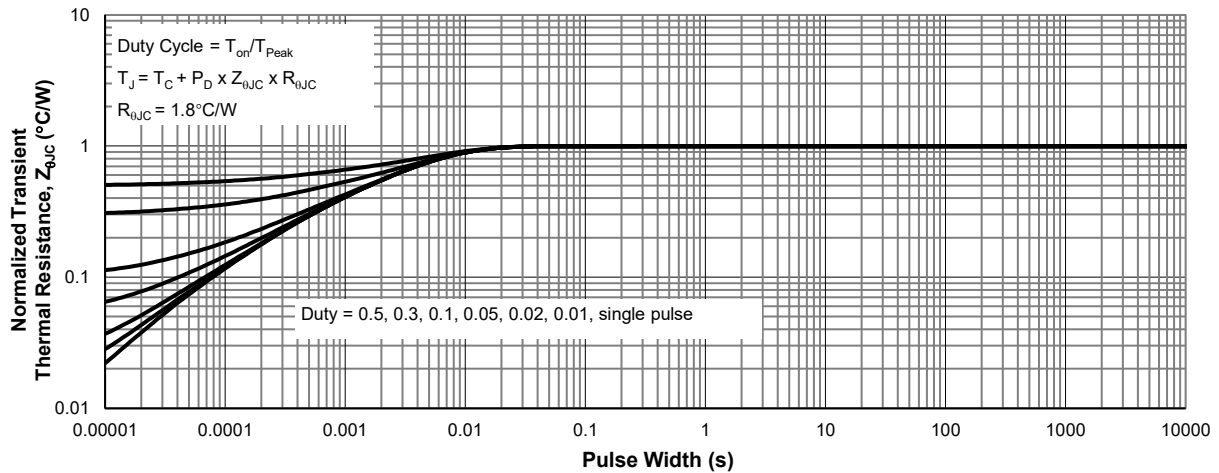
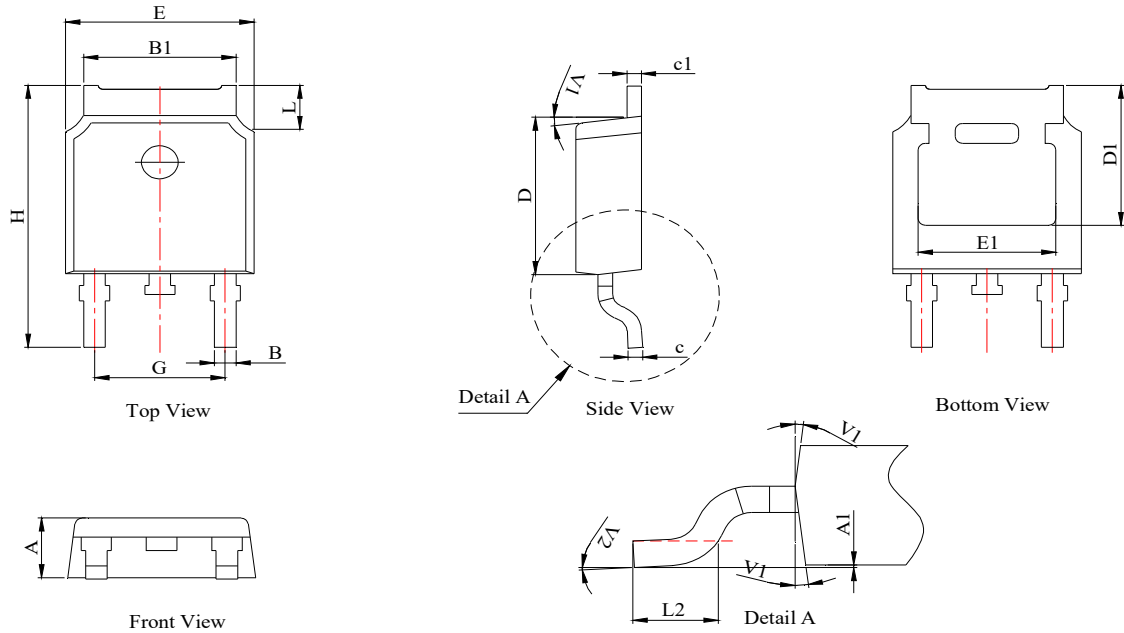


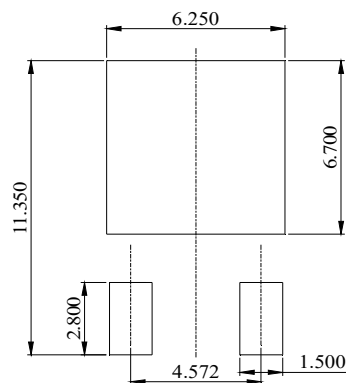
Figure 11: Normalized Maximum Transient Thermal Impedance

TO252-3L Package Information



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10		2.50
A1	0	-	0.10
B	0.66		0.86
B1	5.18		5.48
c	0.40		0.60
c1	0.44		0.58
D	5.90		6.30
D1	5.30REF		
E	6.40		6.80
E1	4.63		
G	4.47		4.67
H	9.50		10.70
L	1.09		1.21
L2	1.35		1.65
V1		7°	
V2	0°	-	6°

Recommended Footprint



DIMENSIONS: MILLIMETERS