

-30V_{DS}/±20V_{GS} P-Channel Enhancement Mode MOSFET

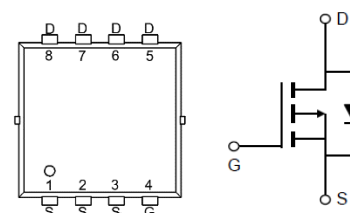
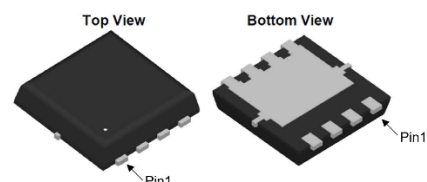
Features

- V_{DS}=-30V, I_D=-70A
- R_{DS(ON)}=7.5mΩ (TYP.) V_{GS}=-10V
- R_{DS(ON)}=13mΩ (TYP.) V_{GS}=-4.5V
- Fast Switching
- Low On-Resistance

Applications

- Switch switching
- Power management in portable/desktop PCs

PDFN5060



Ordering Information

Device	package	Device Marking	Package Qty.
FKBA3031	PDFN5060	BA3031	5000/PCS

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	-30	V
Gate-Source Voltage (V _{GS} =0V, static)	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	-70	A
Continuous Drain Current (T _C =100°C)		-48	A
Pulsed Drain Current	I _{DM}	-180	A
Avalanche Energy, Single Pulsed	E _{AS}	102	mJ
Maximum Power Dissipation (T _C =25°C)	P _D	45	W
Maximum Power Dissipation (T _C =100°C)		23	W
Operating, Storage Temperature Range	T _J , T _{STG}	-55~150	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	-	3.8	-	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	-	59	-	°C/W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.3	-2.4	V
Drain-Source On-stage Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1A$	-	4.5	6	m Ω
		$V_{GS}=-4.5V, I_D=-1A$	-	7	12	
		$V_{GS}=-2.5V, I_D=-1A$	-	10	20	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=-15V$	-	1968	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	723	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	165	-	
Gate Resistance	R_g	$f=1MHz$	-	6	-	Ω
Total Gate Charge	Q_g	$V_{DS}=-15V$	-	36	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=-10V$	-	3	-	
Gate Drain Charge	Q_{gd}	$I_D=-15A$	-	9.5	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=-10V$	-	16	-	ns
Rise time	t_r	$V_{DS}=-15V$	-	19	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=1\Omega$	-	70	-	
Fall time	t_f	$R_G=3\Omega$	-	41	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=-1A$	-	-0.75	-1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=-15A$	-	39	-	ns
Reverse Recovery Charge	Q_{rr}	$d_i/d_t=100A/\mu s$	-	26	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

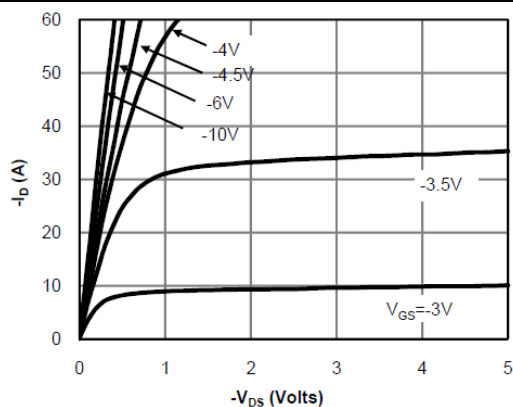


Figure 2. Transfer Characteristics

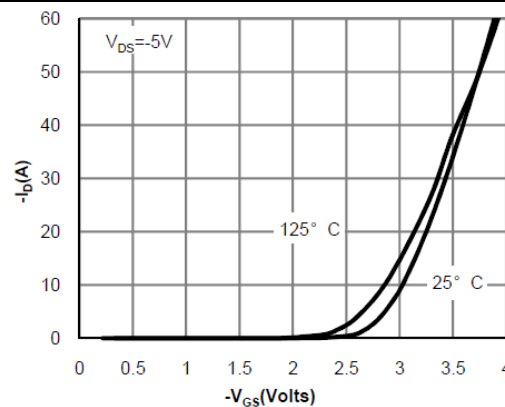


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

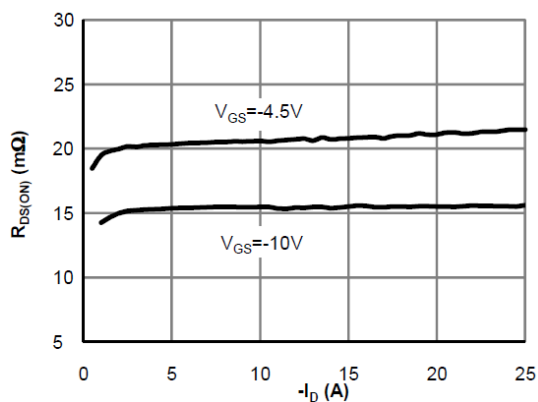


Figure 4. On-Resistance vs. Junction Temperature

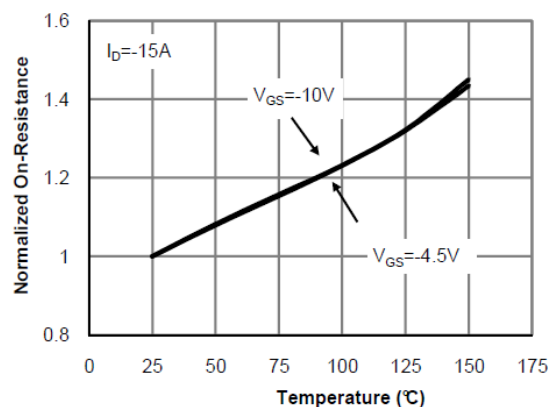


Figure 5. On-Resistance vs. Gate-Source Voltage

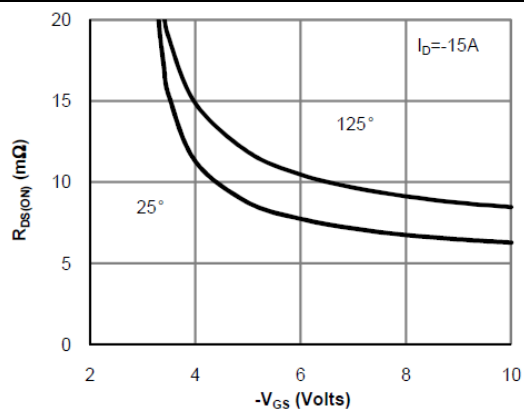


Figure 6. Body-Diode Characteristics

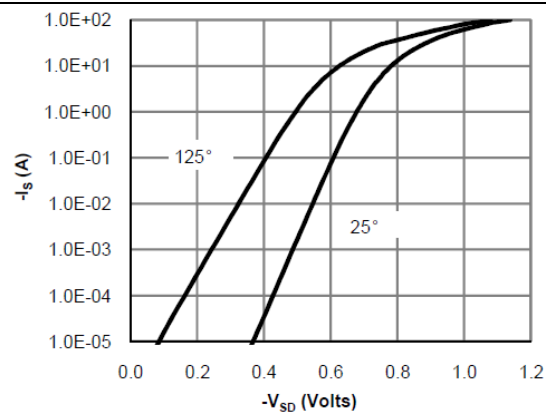


Figure 7. Gate-Charge Characteristics

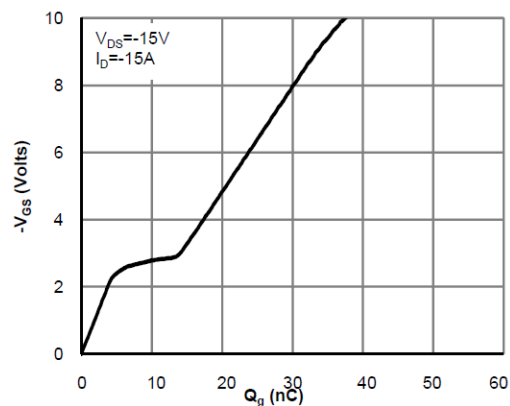


Figure 8. Capacitance Characteristics

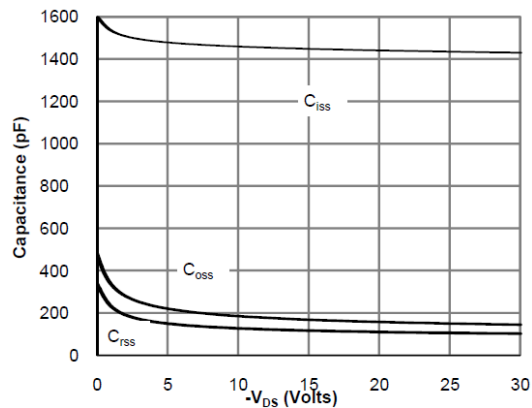


Figure 9. Maximum Forward Biased Safe Operating Area

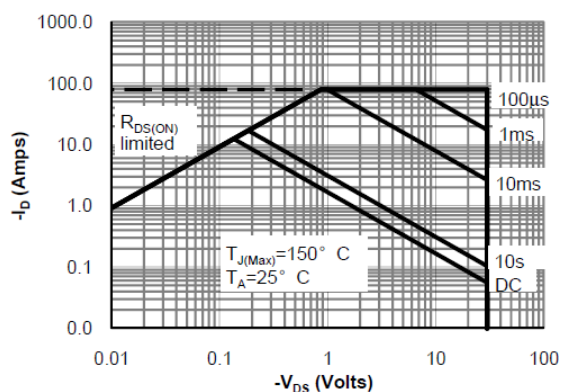


Figure 10. Single Pulse Power Rating Junction-to-Ambient

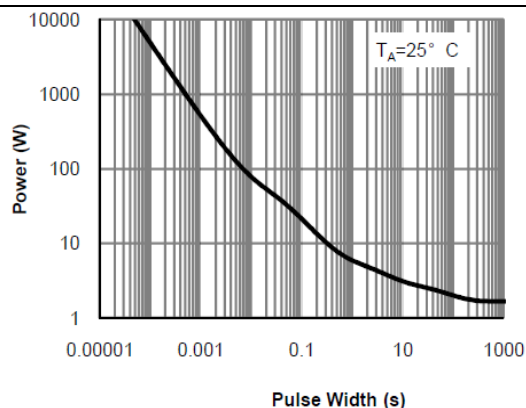
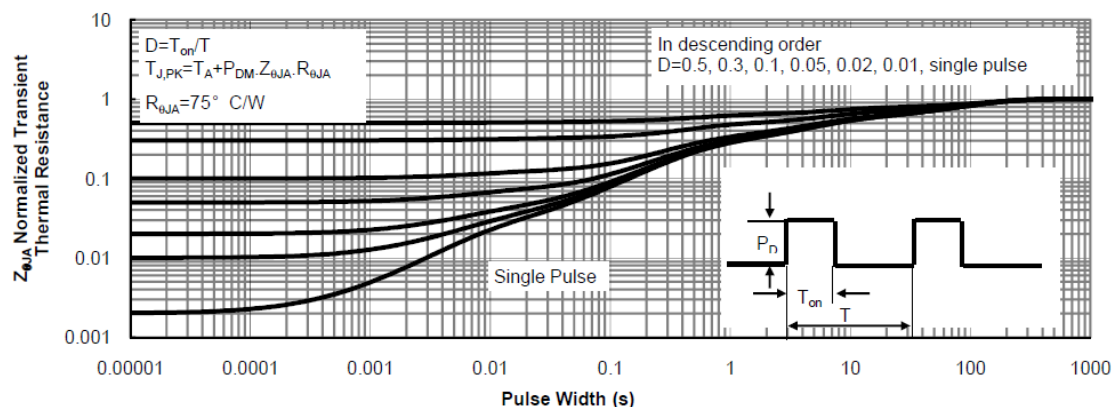
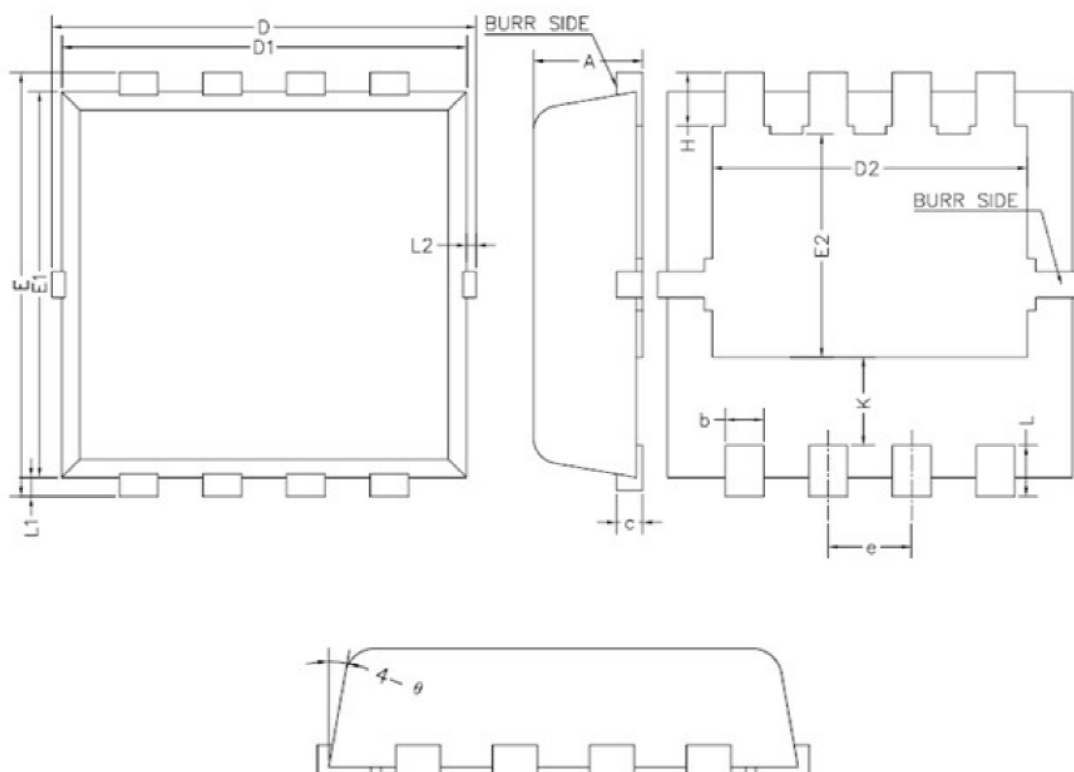


Figure 11. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

PDFN5060



符号	尺寸 (mm)			符号	尺寸 (mm)		
	最小值	典型值	最大值		最小值	典型值	最大值
A	0.90	1.00	1.10	E1	5.70	5.75	5.80
b	0.33	0.41	0.51	E2	3.38	3.58	3.78
c	0.20	0.25	0.30	H	0.41	0.51	0.61
D	4.80	4.90	5.00	K	1.10	-	-
D1	3.61	3.81	3.96	L	0.51	0.61	0.71
e	1.27BSC			L1	0.06	0.13	0.20
E	5.90	6.00	6.10	θ	0°	-	12°

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