



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

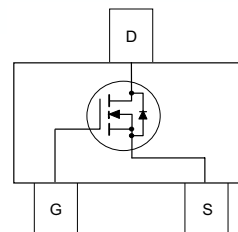
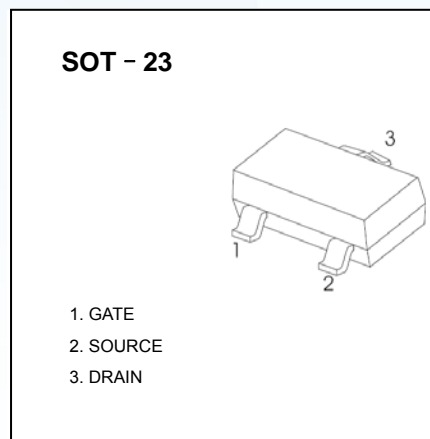
▶ Domestic	Part Number	FDN361BN
▶ Overseas	Part Number	FDN361BN-EV
▶ Equivalent	Part Number	FDN361BN

General Description

These devices are particularly suited for low voltage applications in notebook computers, portable phones, PCMCIA cards, and other battery powered circuits where fast switching, and low in-line power loss are needed in a very small outline surface mount package. [®]

Features

- $V_{DS} (V) = 30V$
- $R_{DS(ON)} < 110m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 160m\Omega$ ($V_{GS} = 4.5V$)



Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous (Note 1a)	1.4	A
	– Pulsed	10	
P_D	Power Dissipation for Single Operation (Note 1a) (Note 1b)	0.5	W
		0.46	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^{\circ}C$
Thermal Characteristics			
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1a)	250	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Note 1)	75	

Electrical Characteristics

T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain–Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	30			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I _D = 250 μA, Referenced to 25°C		26		mV/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C			10	μA
I _{GSS}	Gate–Body Leakage	V _{GS} = ±20 V, V _{DS} = 0 V			±100	nA
On Characteristics (Note 2)						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	1	2.1	3	V
R _{DS(on)}	Static Drain–Source On–Resistance	V _{GS} = 10 V, I _D = 1.4 A		92	110	mΩ
		V _{GS} = 4.5 V, I _D = 1.2 A		120	160	
I _{D(on)}	On–State Drain Current	V _{GS} = 4.5 V, V _{DS} = 5 V	3.5			A
g _{FS}	Forward Transconductance	V _{DS} = 5 V, I _D = 1.4 A		4		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 15 V, V _{GS} = 0 V, f = 1.0 MHz		145	193	pF
C _{oss}	Output Capacitance			35	47	
C _{rss}	Reverse Transfer Capacitance			15	23	
R _G	Gate Resistance	V _{GS} = 15 mV, f = 1.0 MHz		1.6		Ω
Switching Characteristics (Note 2)						
t _{d(on)}	Turn–On Delay Time	V _{DD} = 15 V, I _D = 1 A, V _{GS} = 10 V, R _{GEN} = 6 Ω		3	6	ns
t _r	Turn–On Rise Time			8	16	
t _{d(off)}	Turn–Off Delay Time			16	29	
t _f	Turn–Off Fall Time			2	4	
Q _g	Total Gate Charge	V _{DS} = 15 V, I _D = 1.4 A, V _{GS} = 4.5 V		1.3	1.8	nC
Q _{gs}	Gate–Source Charge			0.5		
Q _{gd}	Gate–Drain Charge			0.5		
Drain–Source Diode Characteristics						
V _{SD}	Drain–Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 0.42 A (Note 2)		0.8	1.2	V
t _{rr}	Diode Reverse Recovery Time	I _F = 1.4 A, d _I /d _t = 100 A/μs		11	22	nS
Q _{rr}	Diode Reverse Recovery Charge			4		

Notes:

- R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design.



a) 250°C/W when mounted on a 0.02 in² pad of 2 oz. copper.



b) 270°C/W when mounted on a minimum pad.

Scale 1 : 1 on letter size paper

- Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

Typical Characteristics

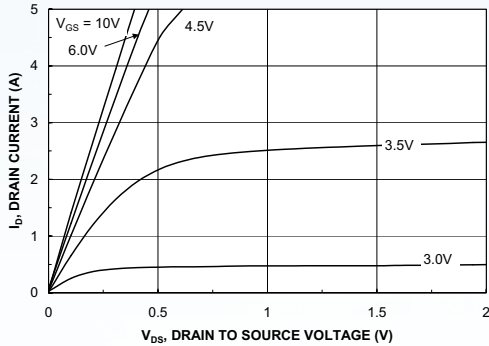


Figure 1. On-Region Characteristics.

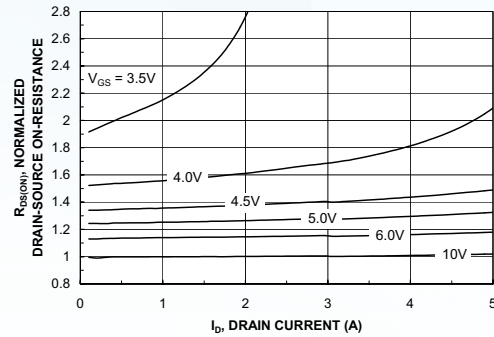


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

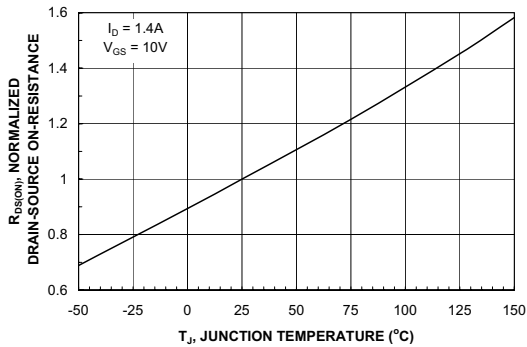


Figure 3. On-Resistance Variation with Temperature.

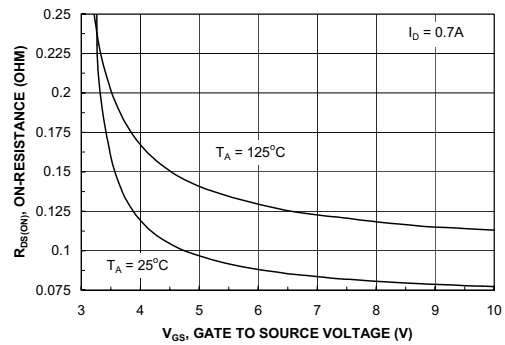


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

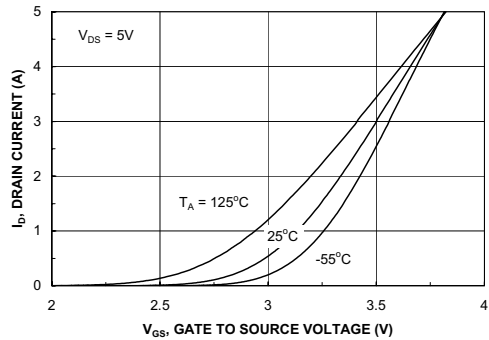


Figure 5. Transfer Characteristics.

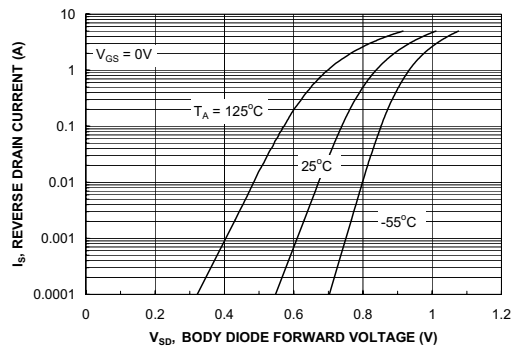


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

Typical Characteristics

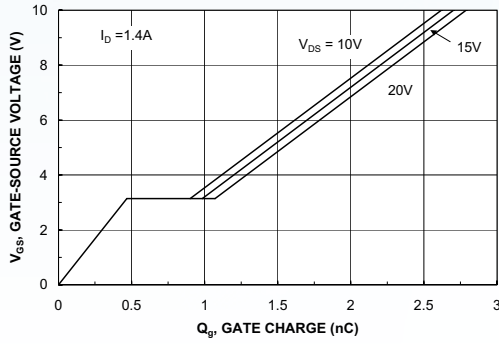


Figure 7. Gate Charge Characteristics.

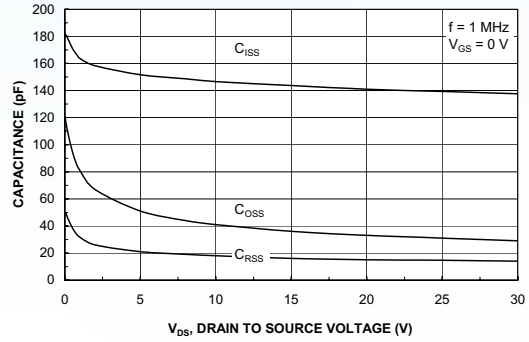


Figure 8. Capacitance Characteristics.

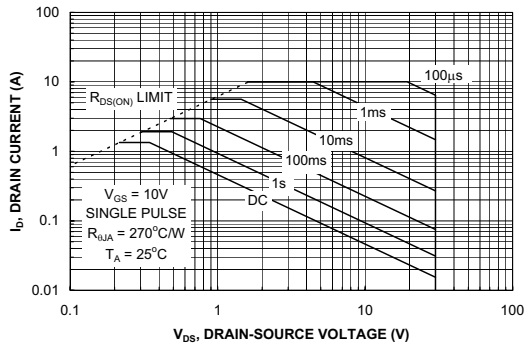


Figure 9. Maximum Safe Operating Area.

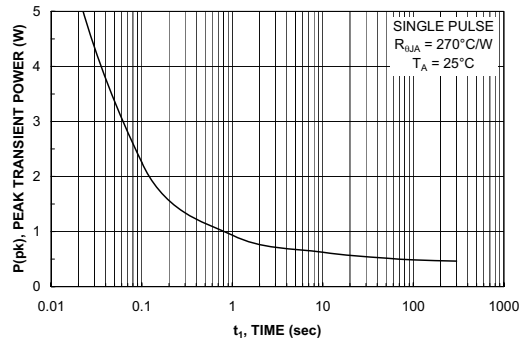


Figure 10. Single Pulse Maximum Power Dissipation.

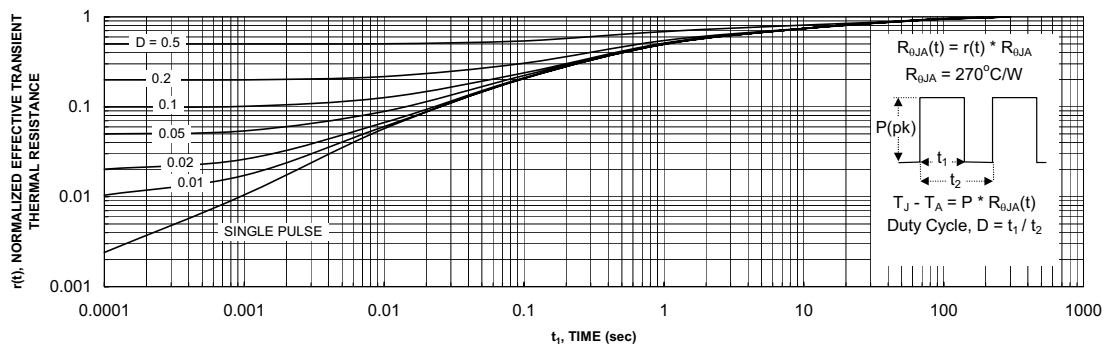
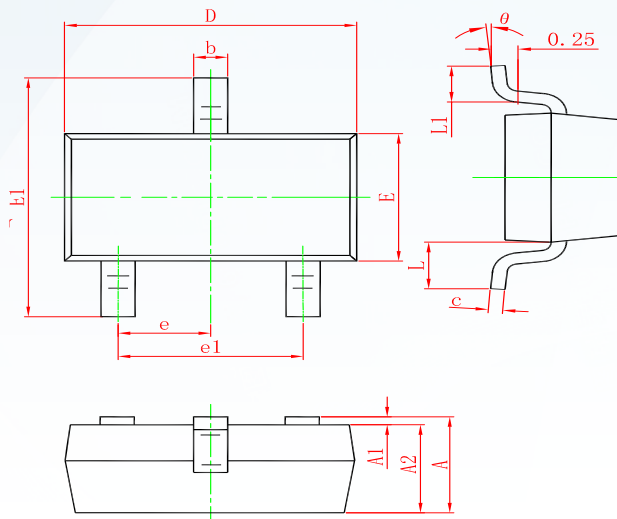


Figure 11. Transient Thermal Response Curve.

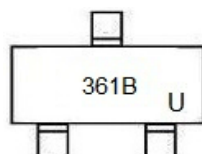
Thermal characterization performed using the conditions described in Note 1b. Transient thermal response will change depending on the circuit board design.

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
theta	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
FDN361BN	SOT-23	3000	Tape and reel

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