

General Description

The MY013DNB is the high cell density trench N-CH MOSFET, which provides excellent $R_{DS(ON)}$ and efficiency for most of the small power switching and load switch applications.

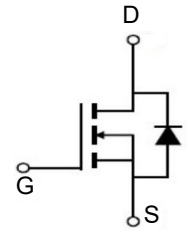
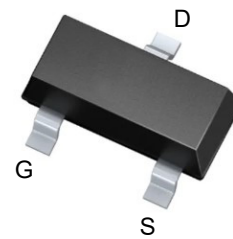


Features

V_{DSS}	30	V
I_D	7.6	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	10	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	13	m Ω

Application

- Battery protection
- Load switch
- Power management



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY013DNB	SOT-23-3L	013DNB	3000

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ\text{C}$ @ Steady State	I_D	7.6	A
	$T_A=70^\circ\text{C}$ @ Steady State		5.5	
Pulsed Drain Current ^A		I_{DM}	30	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$		P_D	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	104	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit s
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.7	1.5	2.2	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5.6A		10	13	mΩ
		V _{GS} = 4.5V, I _D =5.0A		13	15	
Diode Forward Voltage	V _{SD}	I _S =5.6A,V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				5.6	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f=1MHZ		670		pF
Output Capacitance	C _{oss}			92		
Reverse Transfer Capacitance	C _{rss}			68		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =15V,I _D =5.6A		5.2		nC
Gate Source Charge	Q _{gs}			0.9		
Gate Drain Charge	Q _{gd}			1.3		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V,V _{DD} =15V, I _D =1A, R _{GEN} =2.8Ω		4.5		ns
Turn-on Rise Time	t _r			2.5		
Turn-off Delay Time	t _{D(off)}			14.5		
Turn-off Fall Time	t _f			3.5		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristics

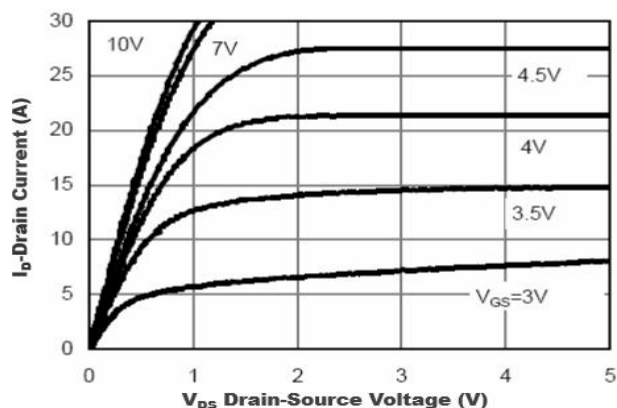


Figure1. Output Characteristics

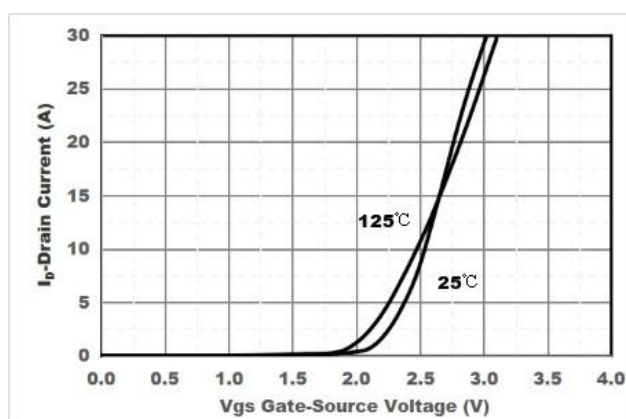


Figure2. Transfer Characteristics

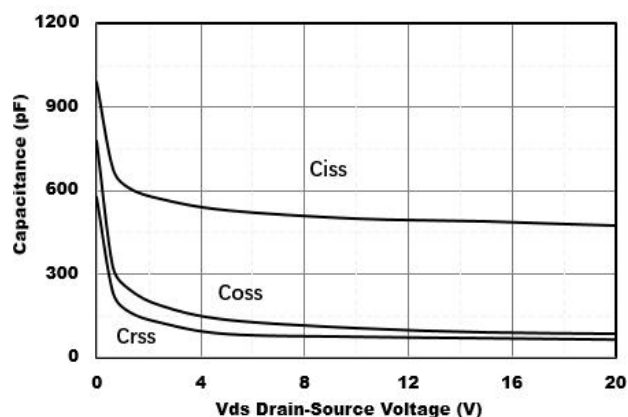


Figure3. Capacitance Characteristics

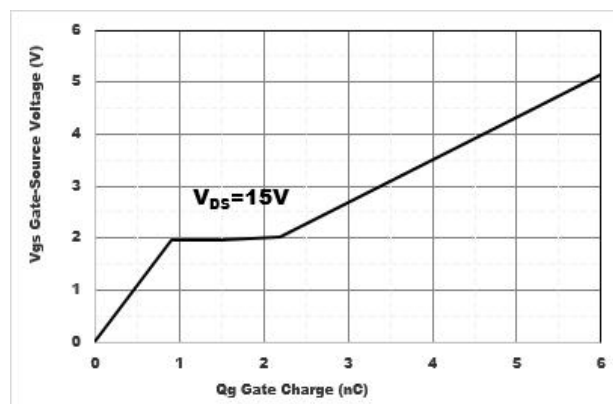


Figure4. Gate Charge

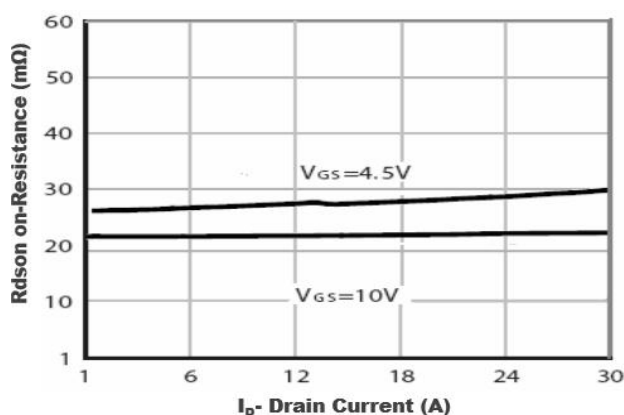


Figure5. Drain-Source on Resistance

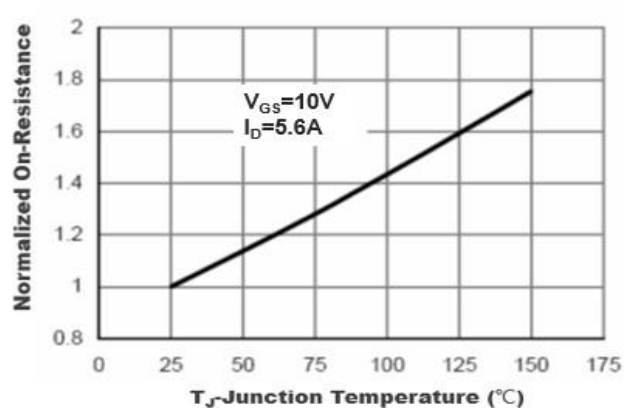


Figure6. Drain-Source on Resistance

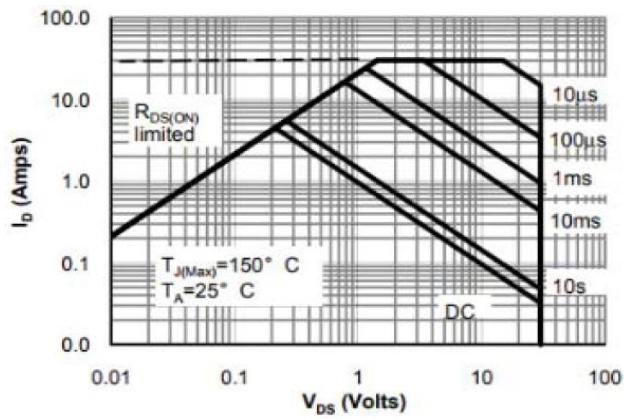


Figure7. Safe Operation Area

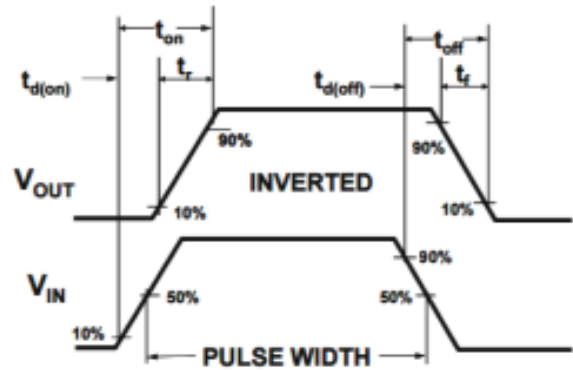
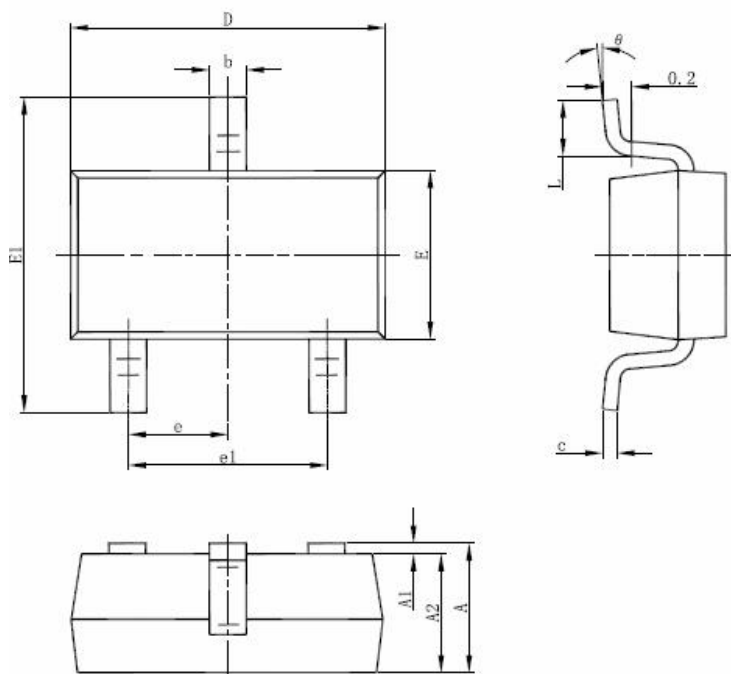


Figure8. Switching wave

Package Mechanical Data-SOT-23-3L



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°