I2MNAB340

650V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
650 V	340 mΩ	14 A

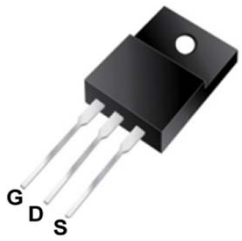
General Description

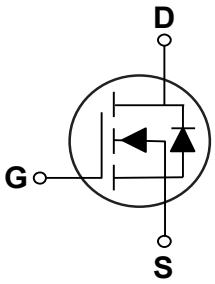
The I2MNAB340 is CoolFET MOSFET family that is utilizing charge balance technology for extremely low on-resistance and low gate charge performance. I2MNAB340 is suitable for applications which require superior power density and outstanding efficiency.

Features

- $R_{DS(ON)} \leqq 340m\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

TO-220F Pin Configuration





Applications

- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Drain Current – Continuous (T_C=25°C)	14	A
I_{DM}	Drain Current – Pulsed (NOTE 1)	30	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	12.25	mJ
P_D	Power Dissipation (T_C=25°C)	25.5	W
T_J	Operating Junction Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		NAB340	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	4.9	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	650	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=650V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=3.2A	---	---	340	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	2.5	---	4.5	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=400V , V_{GS}=10V , I_D=7A	---	20.4	---	nC
Q_{gs}	Gate-Source Charge		---	2.8	---	
Q_{gd}	Gate-Drain Charge		---	5.8	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=400V , R_G=4.7Ω , I_D=7A , V_{GS}=10V	---	6.2	---	nS
T_r	Rise Time		---	21	---	
$T_{d(off)}$	Turn-Off Delay Time		---	28.8	---	
T_f	Fall Time		---	22.4	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , F=1MHz	---	781	---	pF
C_{oss}	Output Capacitance		---	30.3	---	
C_{rss}	Reverse Transfer Capacitance		---	1.47	---	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Body Diode Current		---	---	14	A
I_{SM}	Pulsed Diode Forward Current		---	---	30	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=7A	---	---	1.5	V
t_{rr}	Reverse Recovery Time	V_{GS}=0V , I_S=7A , V_{DD}=400V , dI_F/dt=100A/us	---	218	---	nS
Q_{rr}	Reverse Recovery Charge		---	1.1	---	uC

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. L=0.5mH, V_{DD}=50V, I_{AS}=7A, R_G=25Ω.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

Characteristics Curves

FIG. 1- Power Dissipation

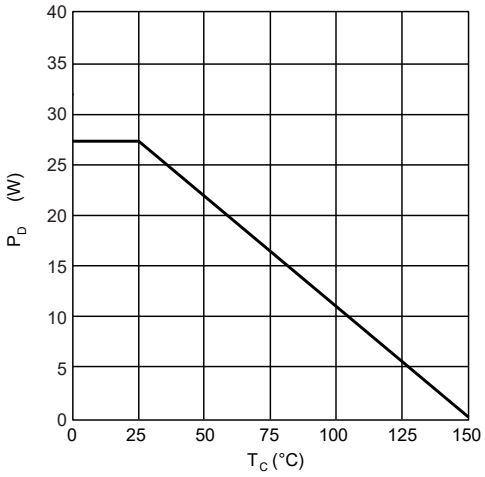


FIG. 2-$R_{DS(ON)}$ vs. T_J

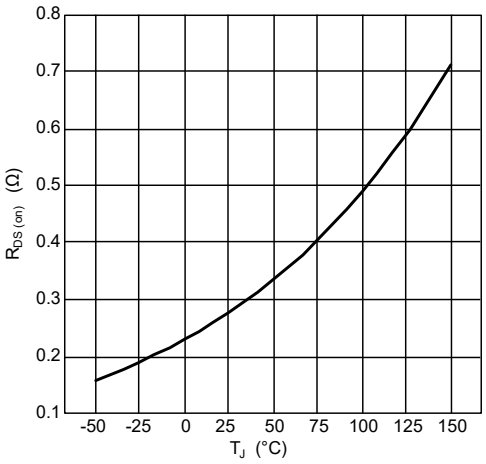


FIG. 3- $R_{DS(ON)}$ vs. I_D

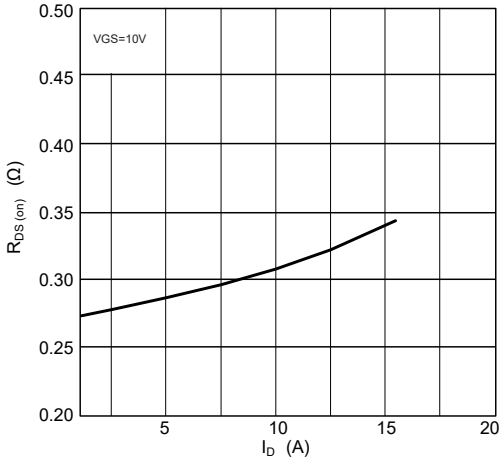


FIG. 4- Gate Charge Characteristics

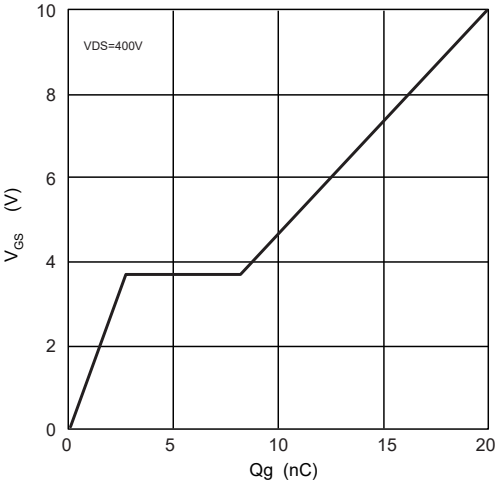


FIG. 5- Safe Operation Area

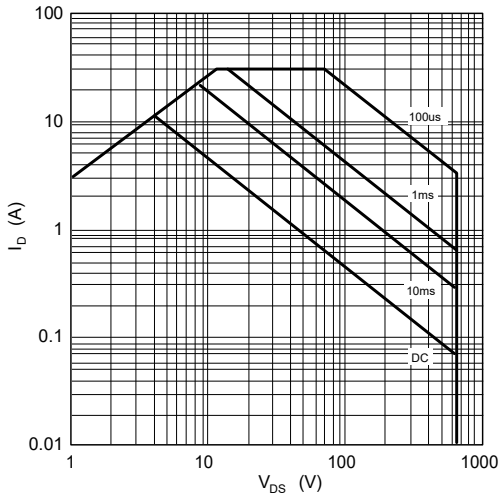
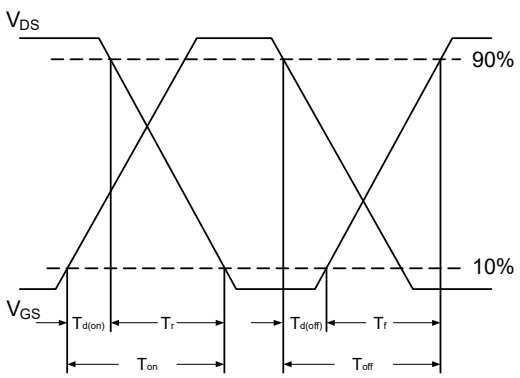
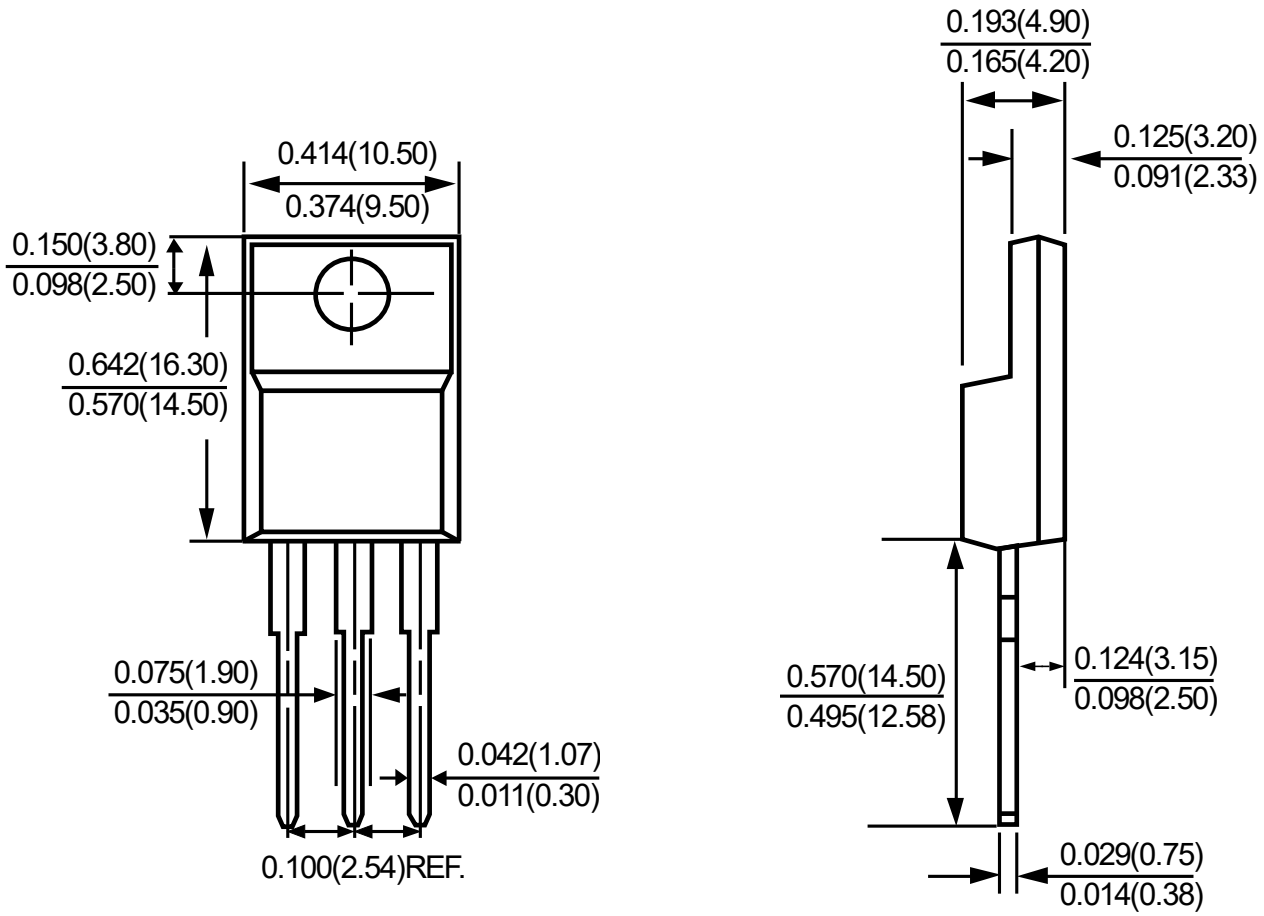


FIG. 6- Switching Time Waveform



Package Outline Dimensions



TO-220F

Dimensions in inches and (millimeters)

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