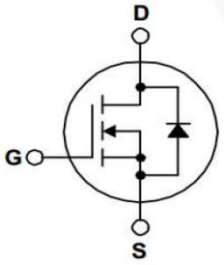
迈诺斯科技

IRLZ44NPBF

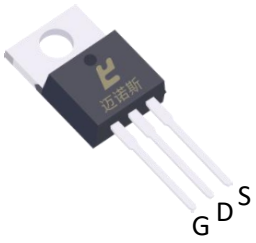
Silicon N-Channel Power MOSFET

Description

The IRLZ44NPBF uses advanced trench technology and design to provide Excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.



Schematic diagram



TO-220

General Features

① V_{DS}=60V,I_D=50A
R_{dson}≦18mΩ @V_{GS}=10V (Typ:15.0 mΩ)
② Low ON Resistance
③ Low Reverse transfer capacitances
④ 100% Single Pulse avalanche energy Test

Application

① Power switching application
② Load switch

Package Marking And Ordering Information

Ordering Codes	Package	Product Code	Packing
IRLZ44NPBF	TO-220	IRLZ44NPBF	Tube

ABSOLUTE RATINGS (at T_C=25°C unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	60	V
I_D	Drain Current (continuous) at Tc=25℃	50	A
I_{DM}	Drain Current (pulsed)	200	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at Tc=25℃	100	W
T_j	Max. Operating Junction Temperature	175	℃
E_{as}	Single Pulse Avalanche Energy	256	mj

Thermal characteristics

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.3	℃/W

Electrical Characteristics (at T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V_{DS}	Drain-source Voltage	V_{GS} =0V, I_D=250μA	60	--	--	V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	V_{GS} =10V, I_D=25A	--	15	18	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.9	2.5	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS} = 0V	--	--	1.0	μA
$I_{GSS(F)}$	Gated Body Leakage Current	V_{GS} = +20V,	--	--	100	nA
$I_{GSS(R)}$	Gated Body Leakage Current	V_{GS} = -20V,	--	--	-100	nA
C_{iss}	Input Capacitance	V_{GS} =0V, V_{DS}=25V, f=1.0MHZ	--	2200	--	pF
C_{oss}	Output Capacitance		--	225	--	pF
C_{rss}	Reverse Transfer Capacitance		--	165	--	pF
Q_g	Total Gate Charge	V_{DS}=25V I_D=10A V_{GS}=10V	--	58	--	nC
Q_{gs}	Gate-Source Charge		--	6	--	nC
Q_{gd}	Gate-Drain Charge		--	15	--	nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=25V,I_D=10A,R_L=0.3Ω V_{GS}=10V,R_G=6.8Ω	--	20	--	nS
t_r	Turn-on Rise Time		--	90	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	45	--	nS
t_f	Turn-off Fall Time		--	90	--	nS

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
I_{SD}	S-D Current(Body Diode)		--	50	--	A
I_{SDM}	Pulsed S-D Current(Body Diode)		--	200	--	A
V_{SD}	Diode Forward Voltage	V_{GS} =0V, I_{DS}=25A	--	--	1.4	V
t_{rr}	Reverse Recovery Time	T_J=25℃,I_F=25A di/dt=100A/us	--	102	--	nS
Q_{rr}	Reverse Recovery Charge		--	50	--	nC
	*Pulse Test: Pulse Width <= 300μs, Duty Cycle< =2%					

Characteristics Curves

Figure 1.Output Characteristics（TJ=25℃）

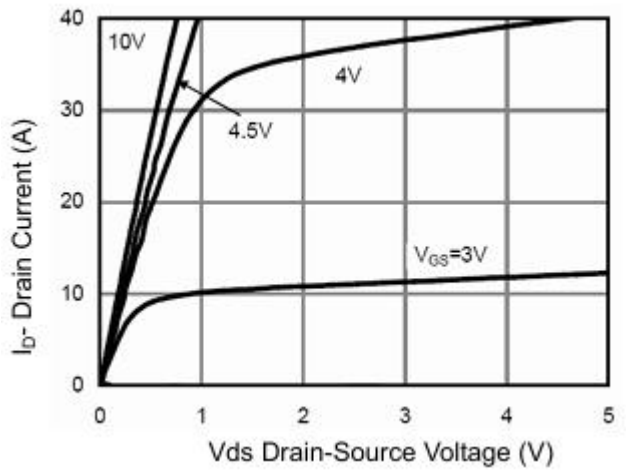


Figure 2.Transfer Characteristics

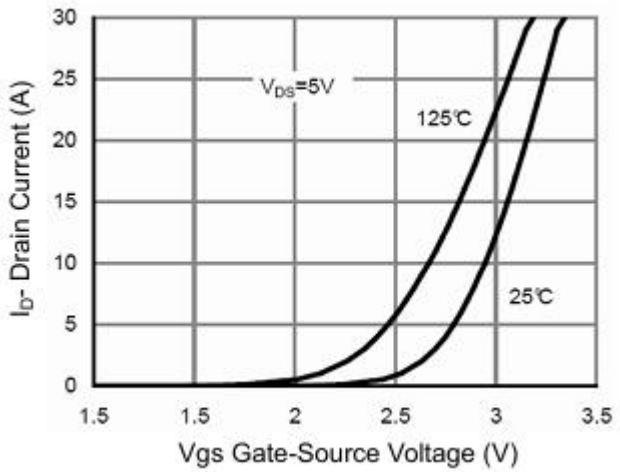


Figure 3.Rdson-Drain Current

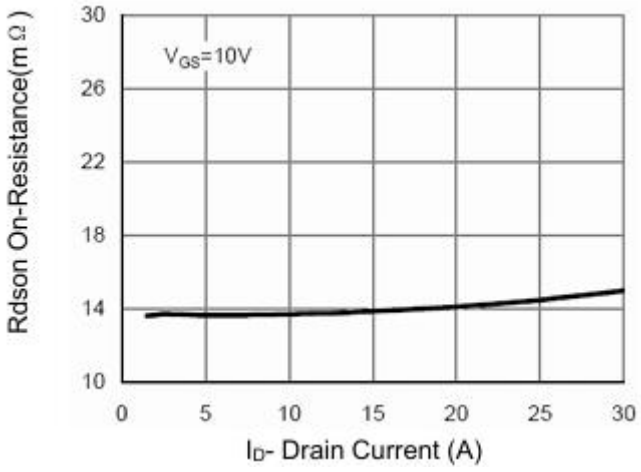


Figure 4.Rdson-Junction Temperature

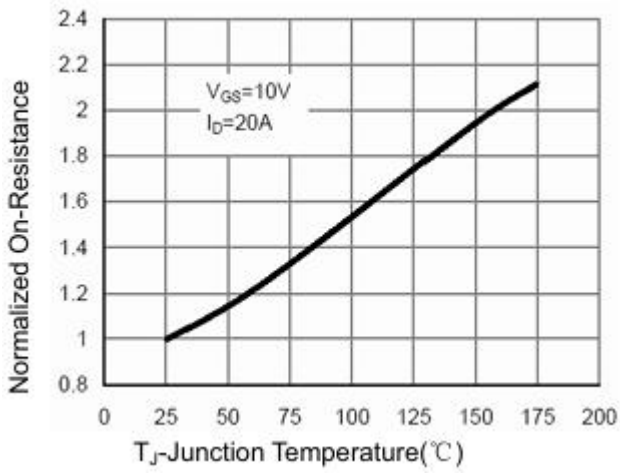


Figure 5.Gate Charge

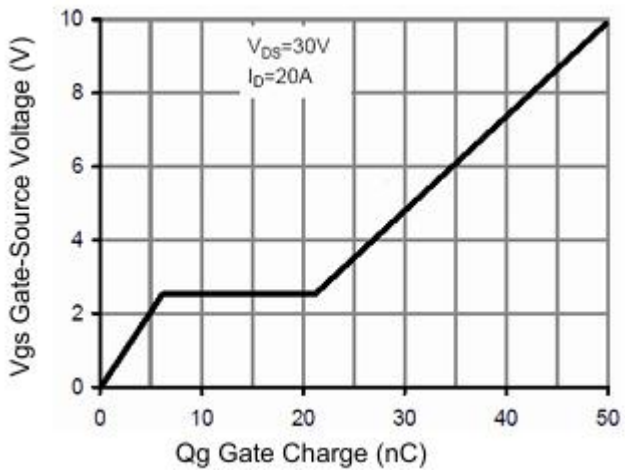


Figure 6.Source- Drain Diode Forward

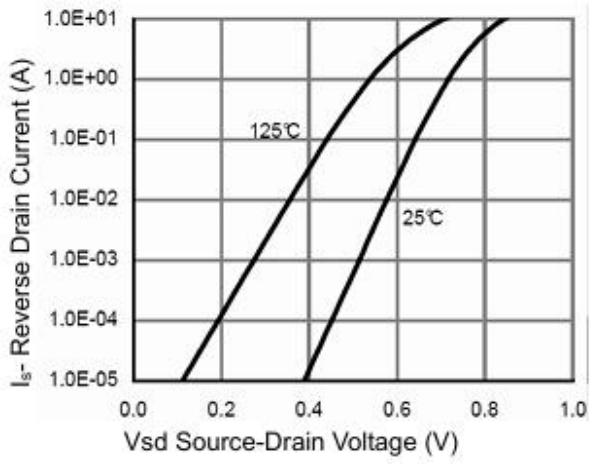


Figure 7.Capacitance vs Vds

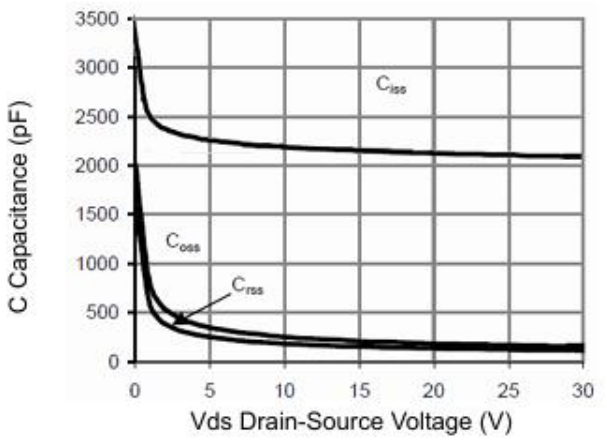


Figure 8.Safe Operation Area

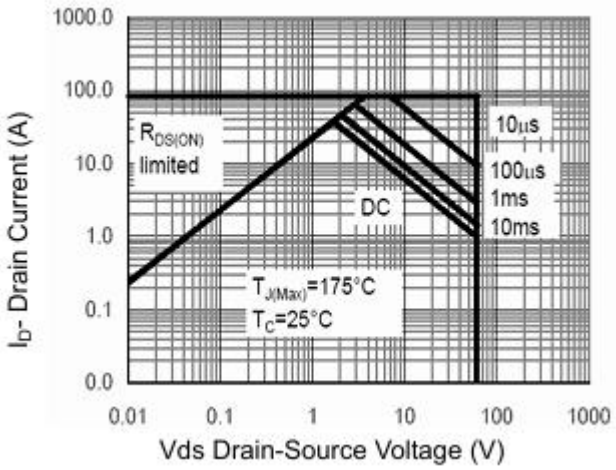


Figure 9.BVDSS vs Junction Temperature

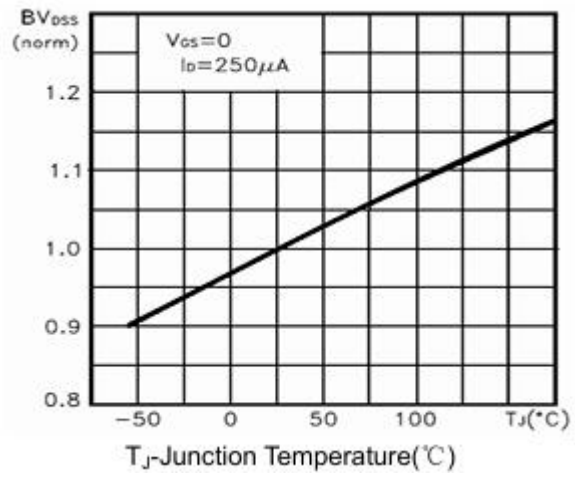


Figure 10.VGS(th) vs Junction Temperature

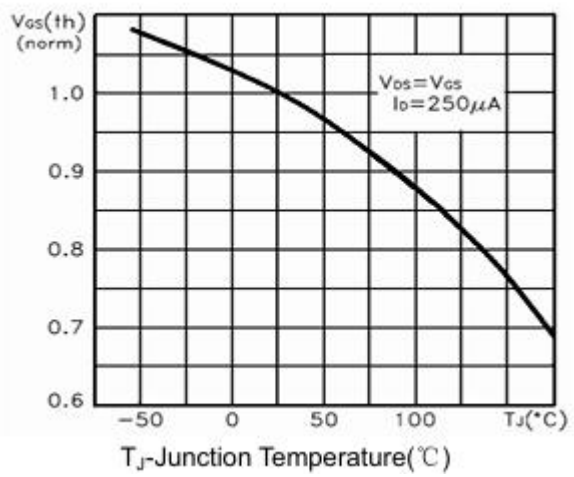
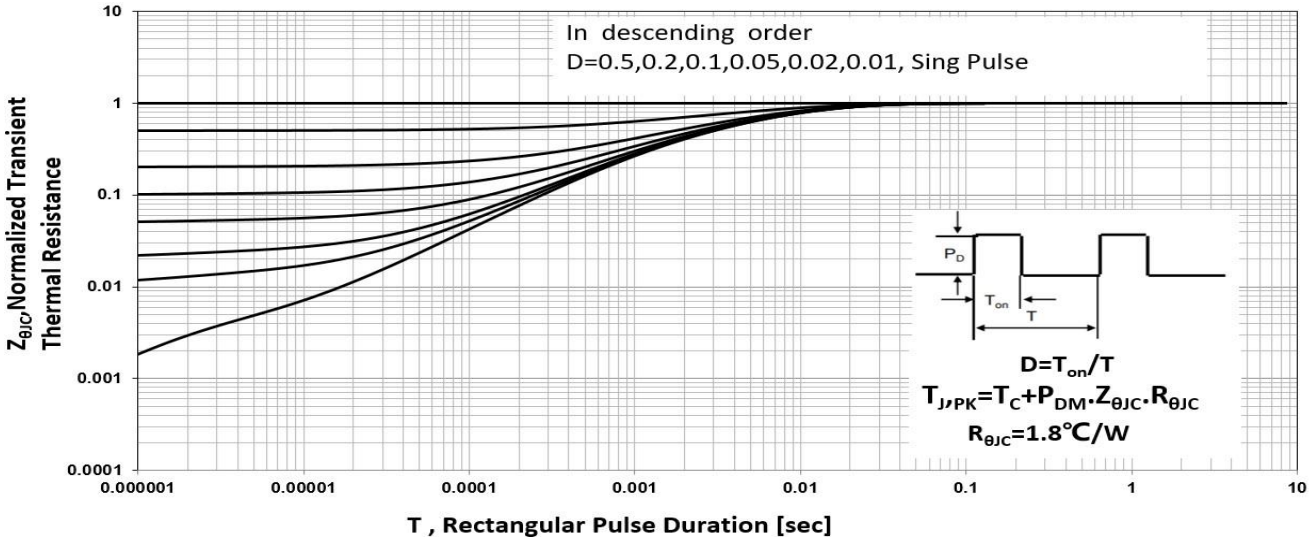
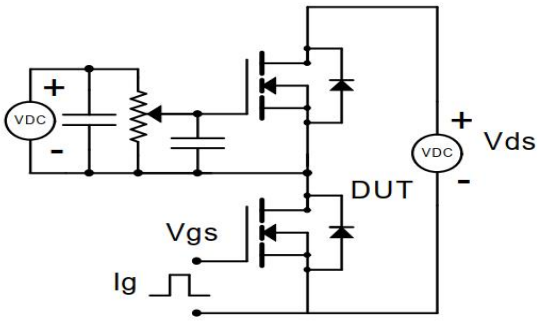
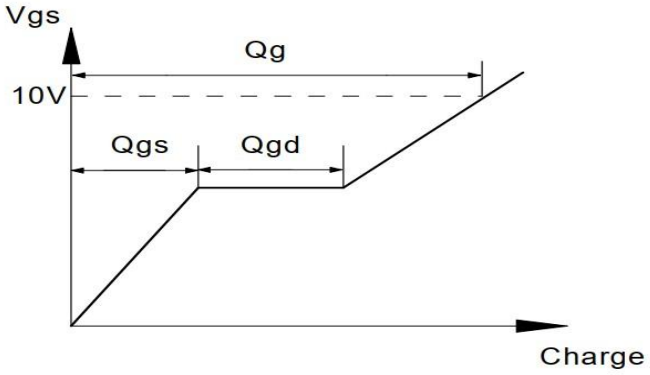
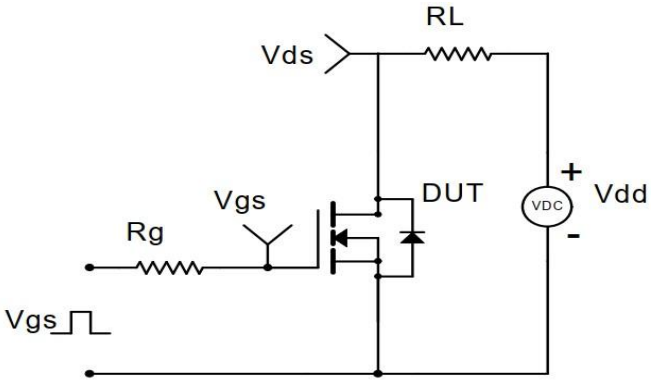
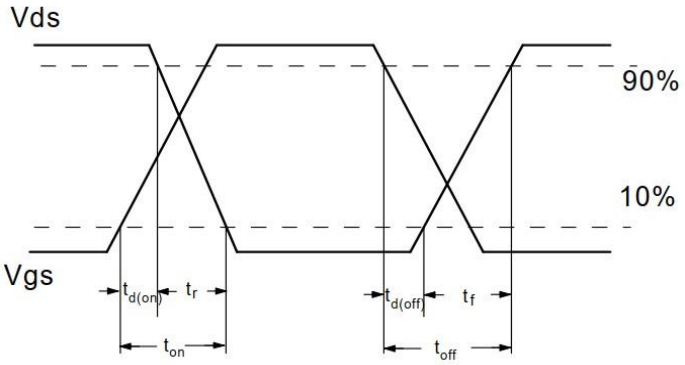
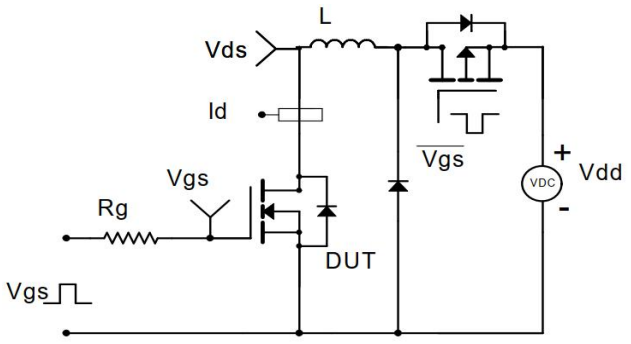
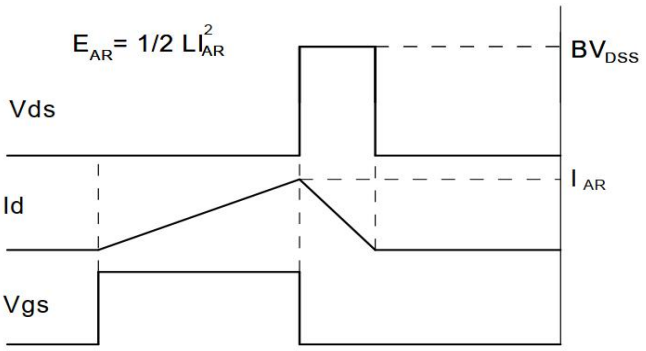
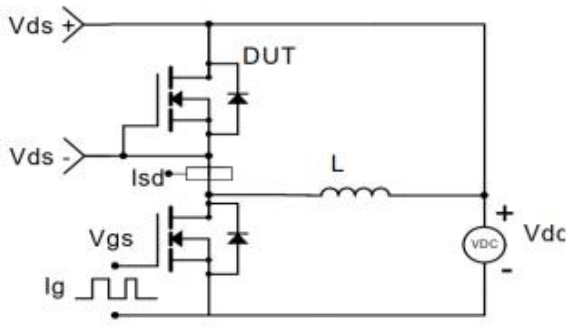
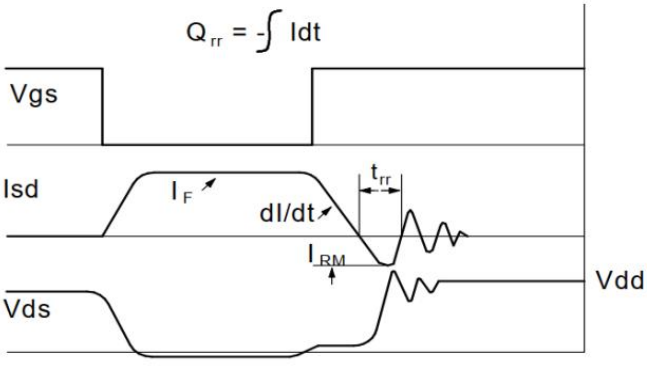


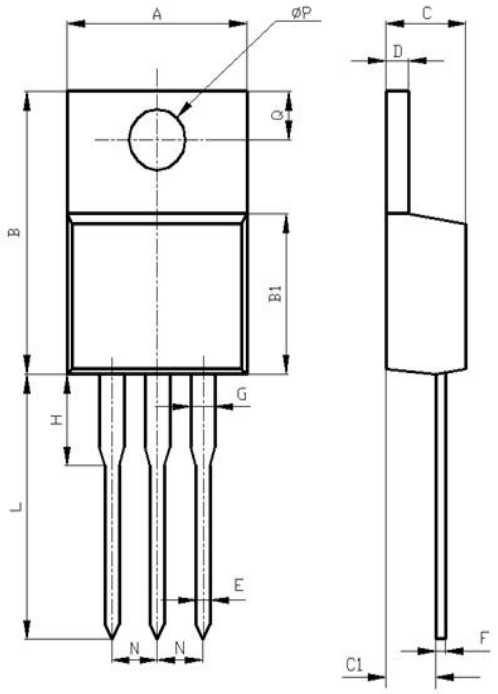
Figure 11 Normalized Maximum Transient Thermal Impedance



Test Circuit and Waveform

Gate Charge Test Circuit	Gate Charge Test Waveform
	
Resistive Switching Test Circuit	**Resistive Switching Test Waveforms**
	
Unclamped Inductive Switching (UIS) Test Circuit	**Unclamped Inductive Switching (UIS) Test Waveforms**
	
Diode Recovery Test Circuit	**Diode Recovery Test Waveforms**
	

Package Description



Items	Values(mm)	
	MIN	MAX
A	9.60	10.6
B	15.0	16.0
B1	8.90	9.50
C	4.30	4.80
C1	2.30	3.10
D	1.20	1.40
E	0.70	0.90
F	0.30	0.60
G	1.17	1.37
H	2.70	3.80
L	12.6	14.8
N	2.34	2.74
Q	2.40	3.00
ΦP	3.50	3.90

TO-220 package

NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change withoutprior notice.

CONTACT:

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