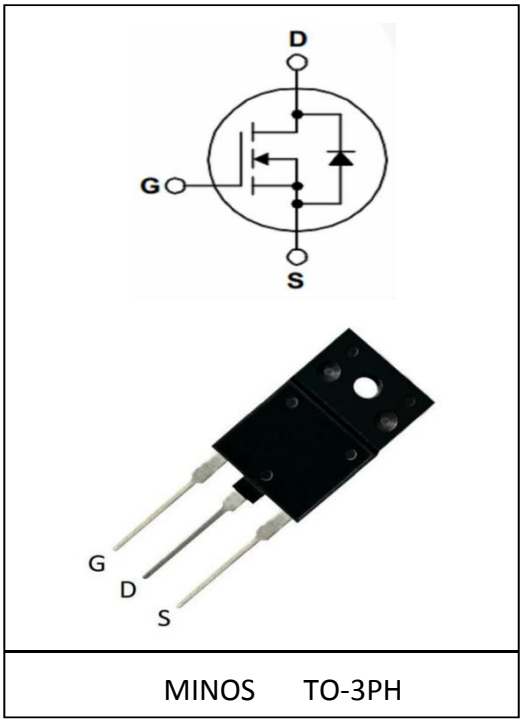
迈诺斯科技

MD3N150

Silicon N-Channel Power MOSFE

Description

The MD3N150 uses advanced technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.



MINOS TO-3PH

General Features

① V_{DS}=1500V, R_{dson}<9mΩ @V_{GS}=10V, I_D=3A (T_{yp}:5.2mΩ)
② Low ON Resistance
③ Low Reverse transfer capacitances
④ 100% Single Pulse avalanche energy Test

Application

① Power Switching application
② Adapter and charger

Package Marking And Ordering Information：

Ordering Codes	Package	Product Code	Packing
MD3N150	TO-3PH	MD3N150	Tube

Electrical Characteristics @ Ta=25℃ (unless otherwise specified)

Absolute Maximum Ratings:

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-to-Source Breakdown Voltage	1500	V
I_D	Drain Current (continuous) at Tc=25℃	3	A
I_{DM}	Drain Current (Pulsed)	12	A
V_{GS}	Gate to Source Voltage	±30	V
P_{tot}	Total Dissipation at Tc=25℃	250	W
T_j	Max. Operating Junction Temperature	175	℃
Eas	Single Pulse Avalanche Energy	125	mJ

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MD3N150

Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	V_{GS}=0V, I_D=250μA	1500			V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	V_{GS}=10V, I_D=1.5A		5.2	9.0	Ω
$V_{GS(th)}$	Gated Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	3.0	4.1	5.0	V
L_{DSS}	Drain to Source leakage Current	V_{DS}=1500V, V_{GS} = 0V			1	μA
$L_{GSS(F)}$	Gated to Source Foward Leakage	V_{GS} = +30V			100	nA
$L_{GSS(R)}$	Gated to Source Reverse Leakage	V_{GS} = -30V			-100	nA
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, f=1.0MHZ		1938		pF
C_{oss}	Output Capacitance			5104		pF
C_{rss}	Reverse Transfer Capacitance			2.4		pF

Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=750V,I_D=3A, R_G=10Ω		33.8		nS
t_r	Turn-on Rise Time			16.7		nS
$t_{d(off)}$	Turn-off Delay Time			56		nS
t_f	Turn-off Fall Time			27.6		nS
Q_g	Total Gate Charge	V_{DS}=750V I_D=3A V_{GS}=10V		9.3		nC
Q_{gs}	Gate-Source Charge			174.9		nC
Q_{gd}	Gate-Drain Charge			5.3		nC

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{SD}	S-D Current(Body Diode)				3	A
I_{SDM}	Pulsed S-D Current(Body Diode)				12	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{DS}=3.0A			1.5	V
t_{rr}	Reverse Recovery Time	T_J=25℃,I_F=3.0A di/dt=100A/us		302.3		nS
Q_{rr}	Reverse Recovery Charge			9.9		nC
	*Pulse Test: Pulse Width <= 300μs, Duty Cycle< =2%					

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.7	℃/W

Typical Performance Characteristics

Fig.1 Safty peration area	Fig.2 Thermal impedance

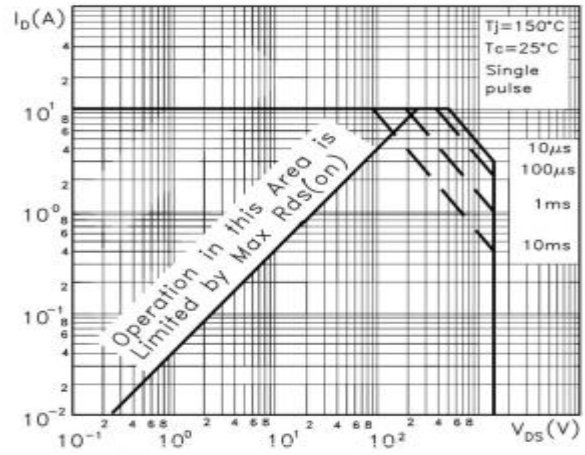
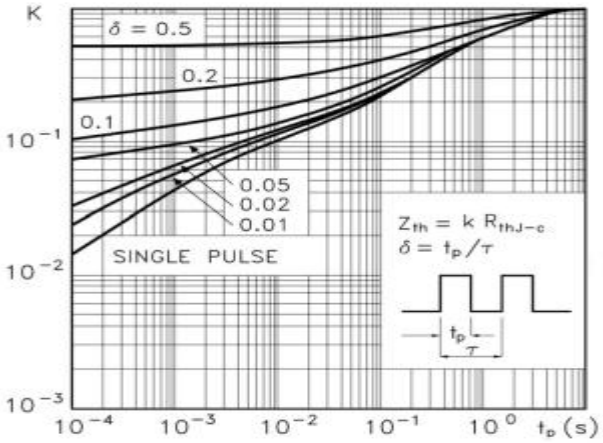

	

Fig.3 Output characteristics	**Fig.4 Transfer characteristics**

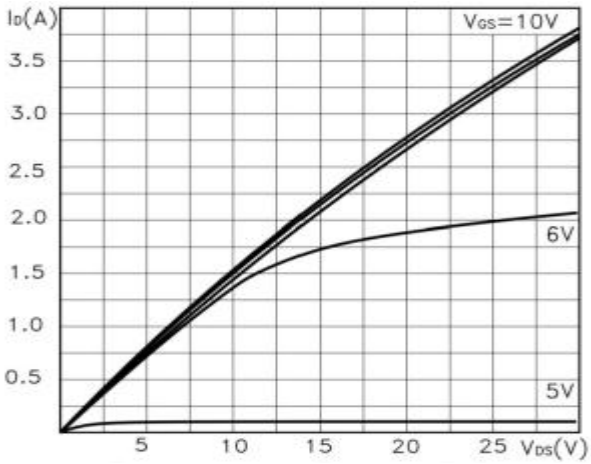
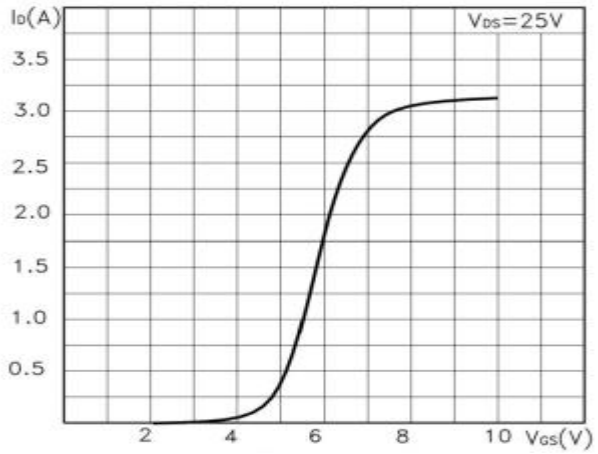

	

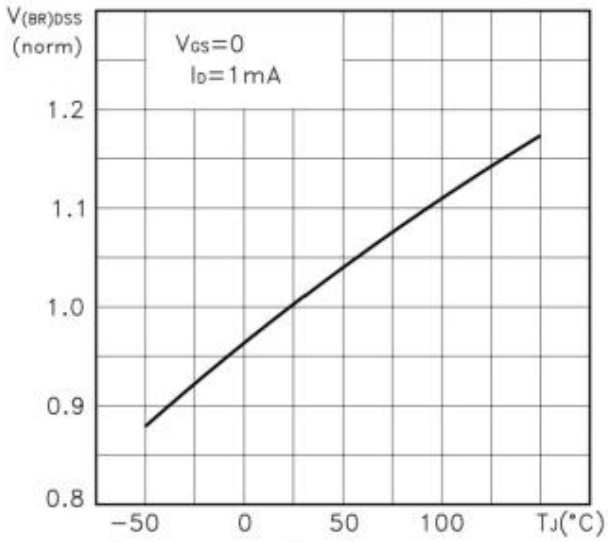
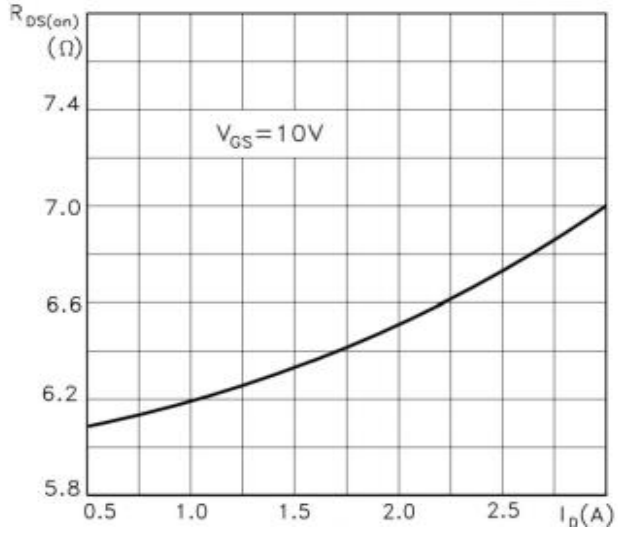
Fig.5 Normalized BVDSS vs.temperature	**Fig.6 Static drain-source on resistance**
	

Fig.7 Gate charge vs.gate-source voltage

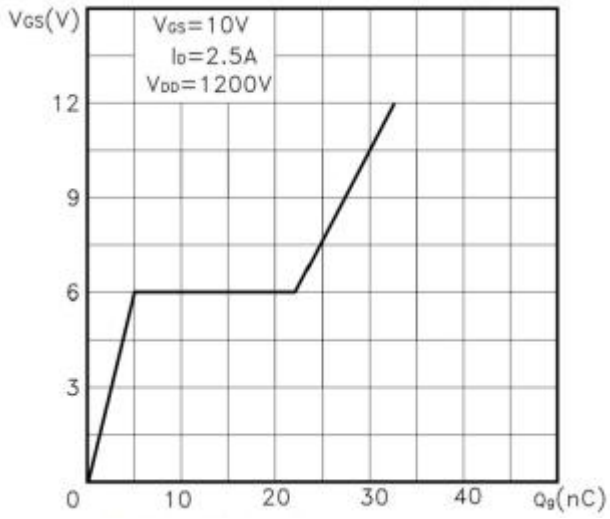


Fig.8 Capacitance variations

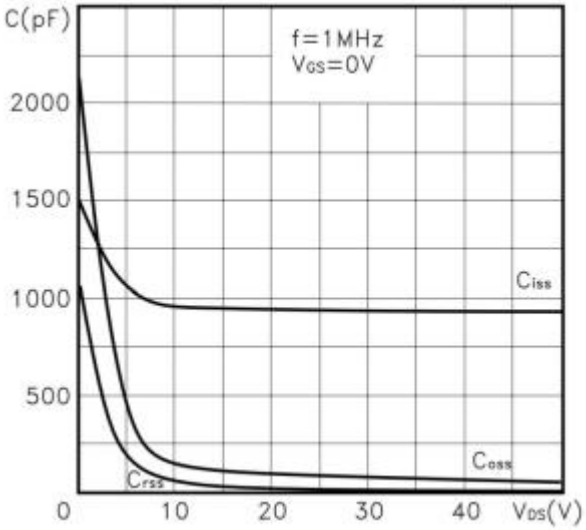


Fig.9 Normalized gate threshold voltage vs.temperature

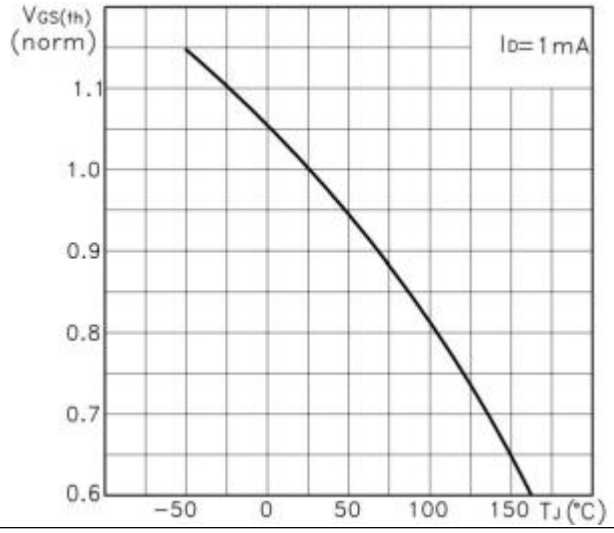


Fig.10 Capacitance variations

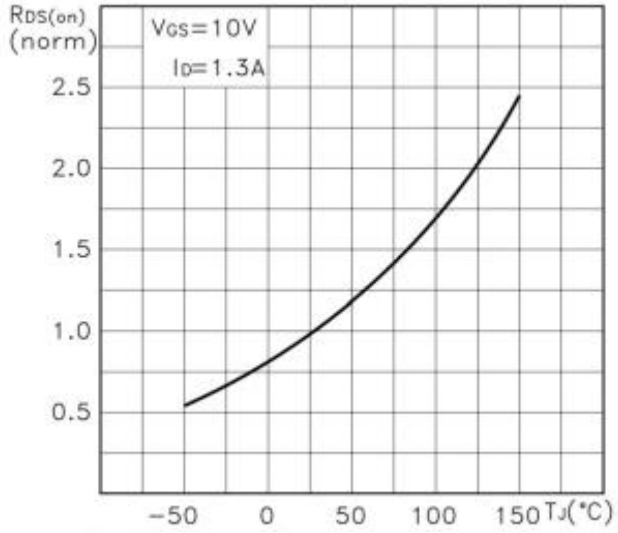


Fig.11 Normalized gate threshold voltage vs.temperature

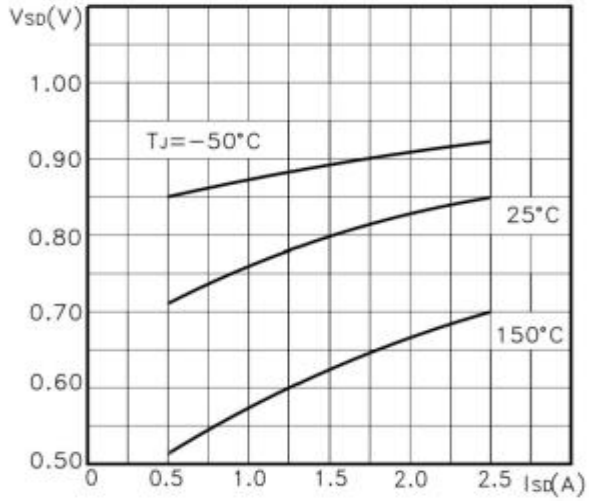
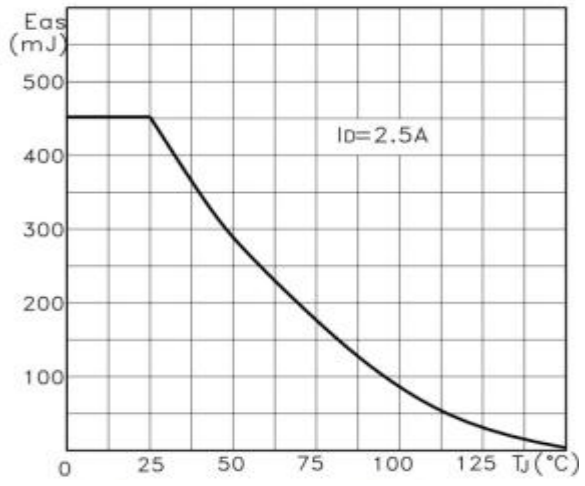
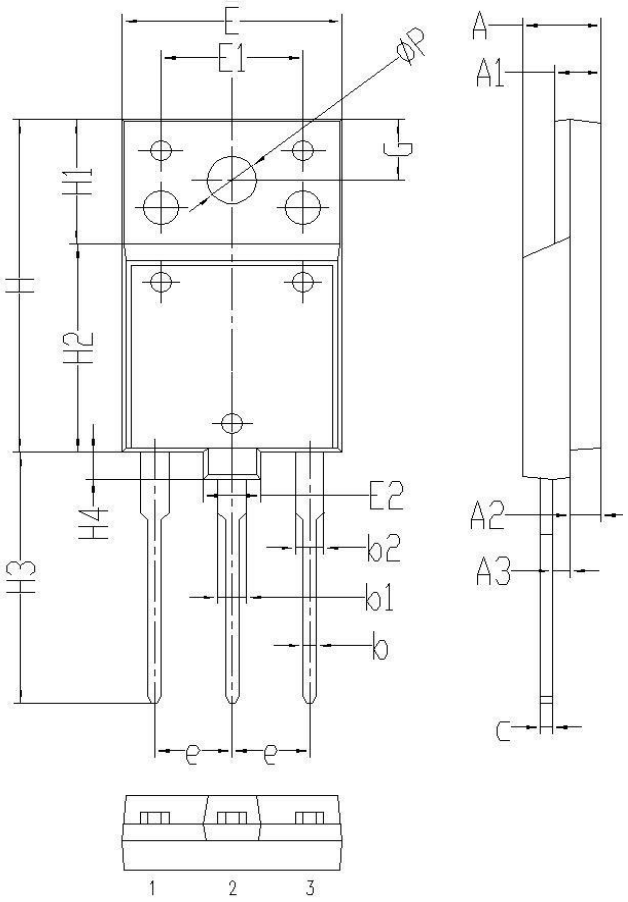


Fig.12 Normalized on resistance vs.temperature



Package Description

TO-3PH PACKAGE



Symbol	单位 mm		
	Min	Nom	Max
A	5.35	5.55	5.75
A1	2.80	3.00	3.20
A2	1.90	2.10	2.30
A3	1.10	1.30	1.50
b	0.65	0.75	0.85
b1	1.80	2.00	2.20
b2	1.80	2.00	2.20
c	0.70	0.90	1.10
e	5.25	5.45	5.65
E	15.3	15.5	15.7
E1	9.80	10.0	10.2
E2	3.80	4.00	4.20
H	24.3	24.5	24.7
H1	9.00	9.20	9.40
H2	15.1	15.3	15.5
H3	18.5	19.0	19.5
H4	1.80	2.00	2.20
H5	4.80	5.00	5.20
G	4.3	4.5	4.7
ΦP	3.40	3.60	3.80

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.

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