

100V/230A N-Channel Advanced Power MOSFET

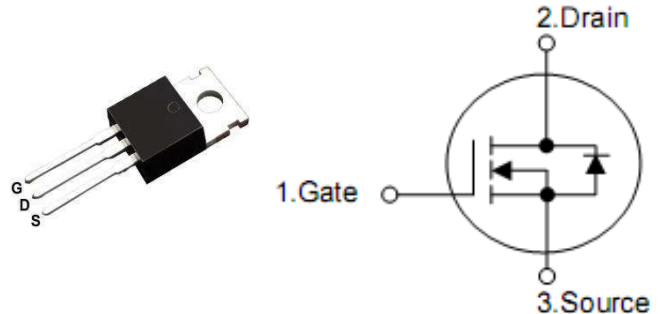
B_{VDSS}	100V
ID	230A
R_{DS(on)} (typ.) @ V_{GS} = 10V	2.1mΩ

Features.

- Improved dv/dt Capability, High Ruggedness.
- Maximum Junction Temperature Range (150°C)
- 100% Avalanche Tested

Applications

- Battery management
- Uninterruptible Power Supply (UPS)



Order Information

Product	Package	Marking	Tube	Carton
M10N026K	TO-220	PGP10N026H	50PCS	5000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{(BR)DSS}	Drain-Source Breakdown Voltage		100	V
V _{GS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	TC =25°C	230	A
Mounted on Large Heat Sink				
E _{AS}	Single Pulse Avalanche Energy (Note1)		1503	mJ
I _{DM}	Pulse Drain Current Tested (Sillicon Limit) (Note2)	TC =25°C	920	A
I _D	Continuous Drain current(Silicon limit)	TC =25°C	230	A
	Continuous Drain current (Package limit)		180	A
P _D	Maximum Power Dissipation	TC =25°C	248	W
R _{θJC}	Thermal Resistance Junction-to-Case (Note3)		0.5	°C/W

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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	VDS=100V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	2	--	4	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note4)	VGS=10V, ID=50A	--	2.1	2.6	mΩ
Dynamic Electrical Characteristics @ Tj = 25°C (unless otherwise stated) (Note5)						
C _{iss}	Input Capacitance	VDS=50V, VGS=0V, F=100kHz	--	7040	--	pF
C _{oss}	Output Capacitance		--	2190	--	pF
C _{rss}	Reverse Transfer Capacitance		--	39	--	pF
Q _g	Total Gate Charge	VDS=50V, ID=20A, VGS=10V	--	138	--	nC
Q _{gs}	Gate-Source Charge		--	39	--	nC
Q _{gd}	Gate-Drain Charge		--	19	--	nC
R _G	Gate Resistance	F=1MHz	--	0.6	--	Ω
Switching Characteristics (Note5)						
t _{d(on)}	Turn-on Delay Time	VDS=50V, ID=20A, RG=3Ω, VGS=10V	--	31	--	nS
t _r	Turn-on Rise Time		--	20	--	nS
t _{d(off)}	Turn-off Delay Time		--	94	--	nS
t _f	Turn-off Fall Time		--	31	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS=35A,VGS=0V	--	--	1.2	V

Note:

- Limited by TJmax, starting TJ = 25° C, RG =25Ω, VDS =45V, VGS =10V. Part not recommended for use above this value.
- Repetitive Rating: Pulse width limited by maximum junction temperature.
- Surface Mounted on FR4 Board, t ≤ 10 sec.
- Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

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Typical Performance Characteristics

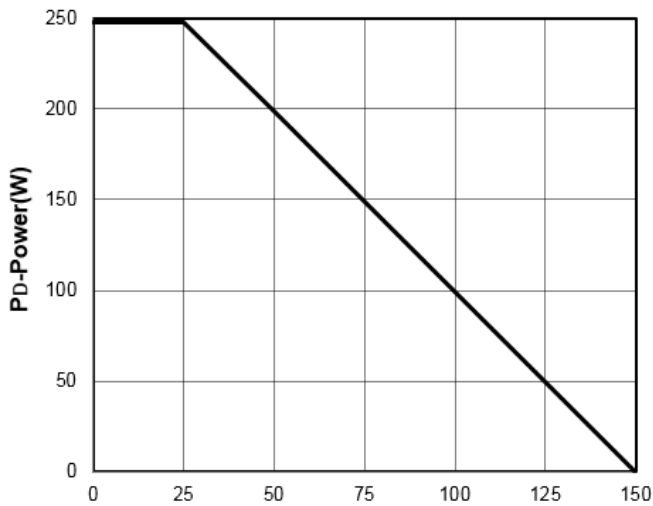


Figure1: T_J -Junction Temperature (°C)

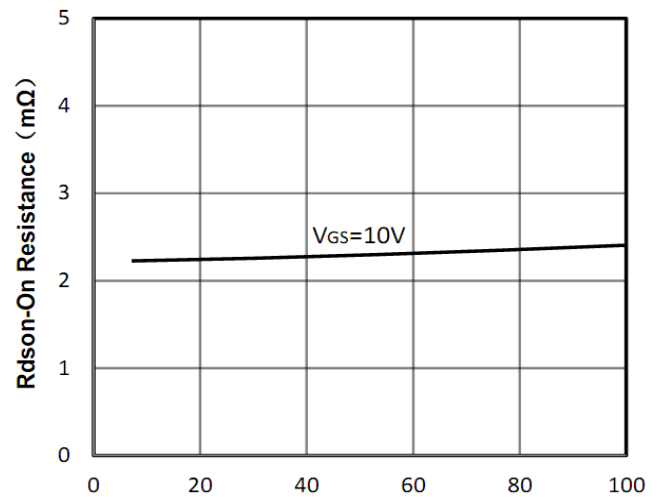


Figure2: I_D -Drain Current (A)

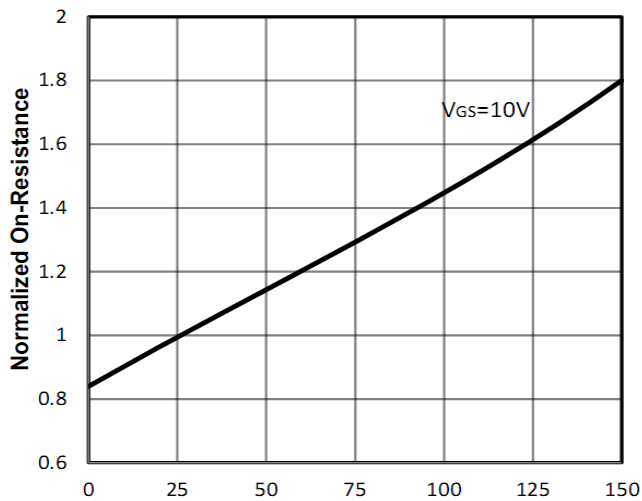


Figure3: T_J -Junction Temperature (°C)

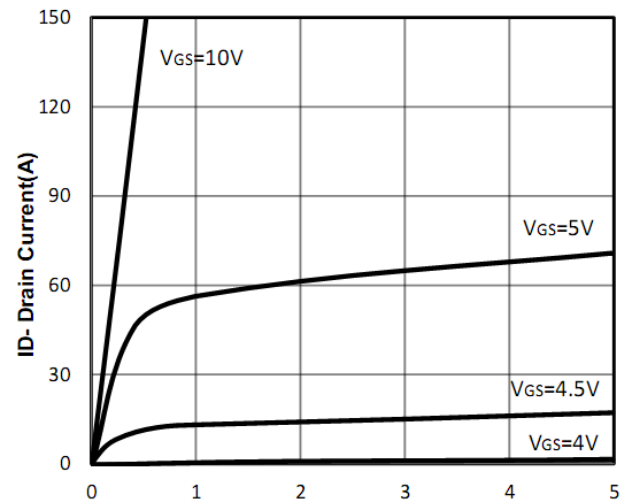


Figure4: V_{DS} -Drain Source Voltage (V)

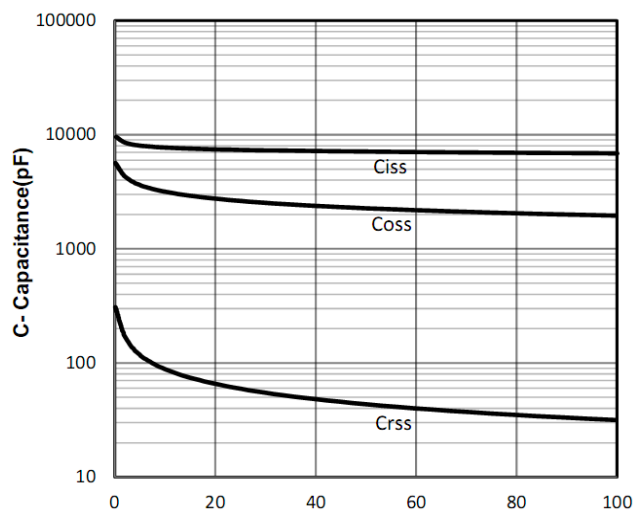


Figure5: V_{DS} -Drain Source Voltage (V)

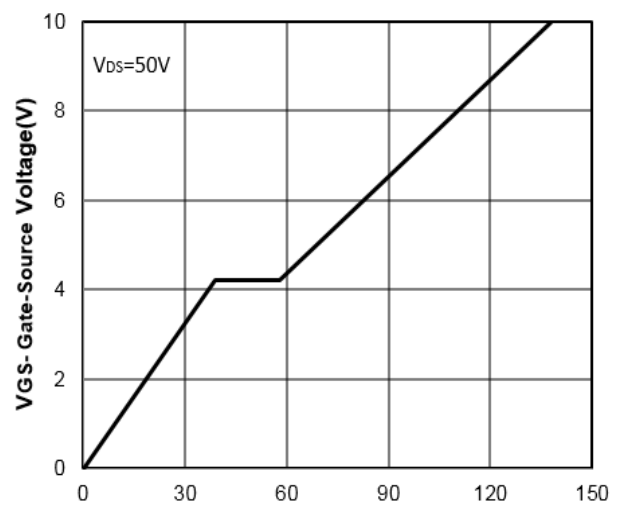


Figure6: Q_g -Gate Charge (nC)

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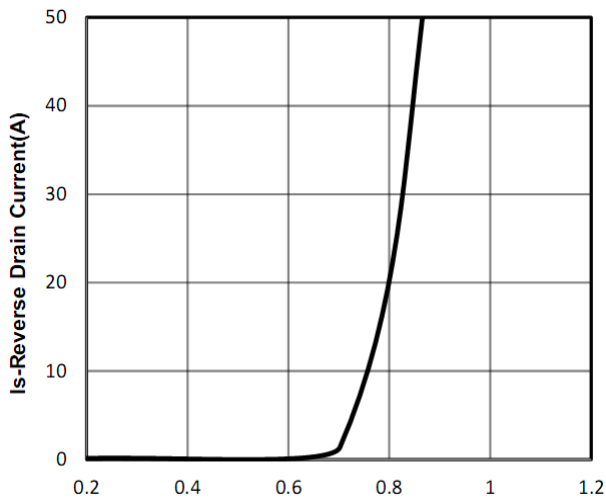


Figure7: Vsd -Source Drain Voltage (V)

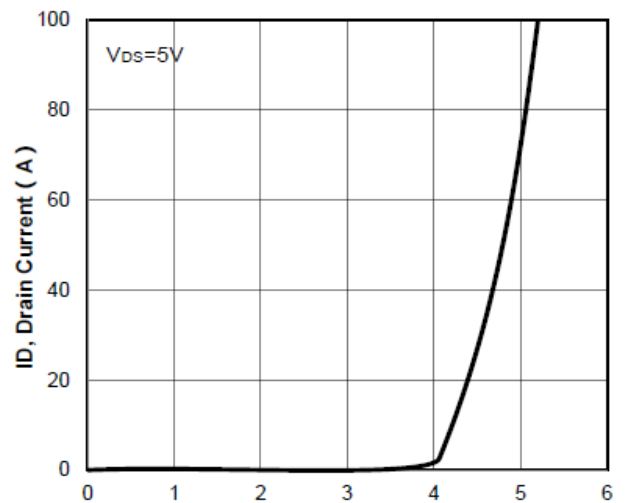


Figure8: Vgs -Gate Source Voltage (V)

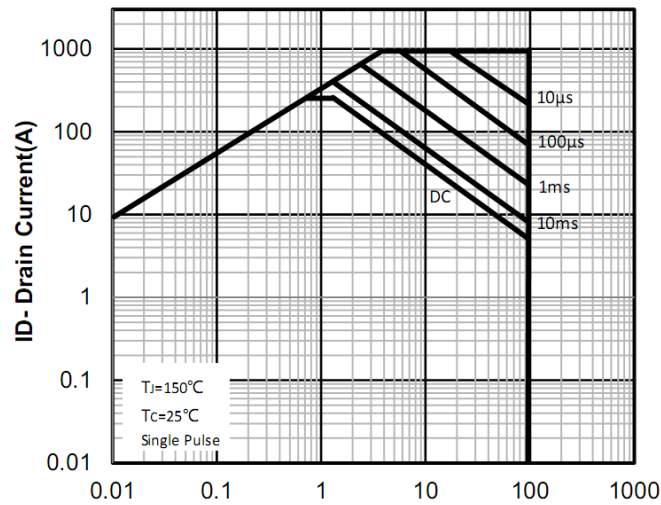


Figure9: VDS -Drain Source Voltage (V)

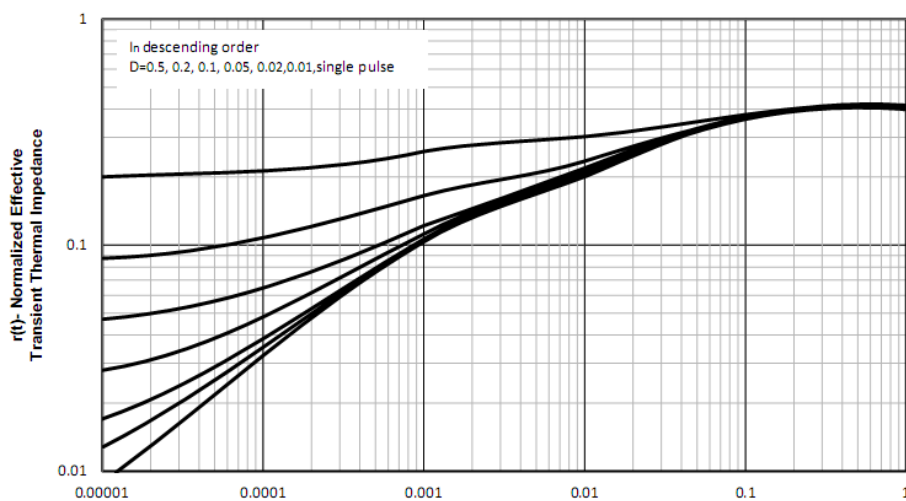


Figure10: Square Wave Pulse Duration (sec)

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Test Circuit and Waveform:

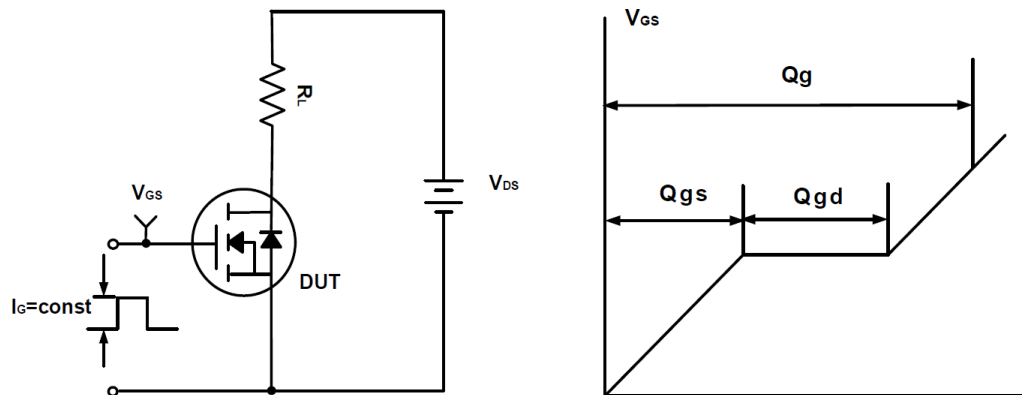


Figure A Gate Charge Test Circuit & Waveforms

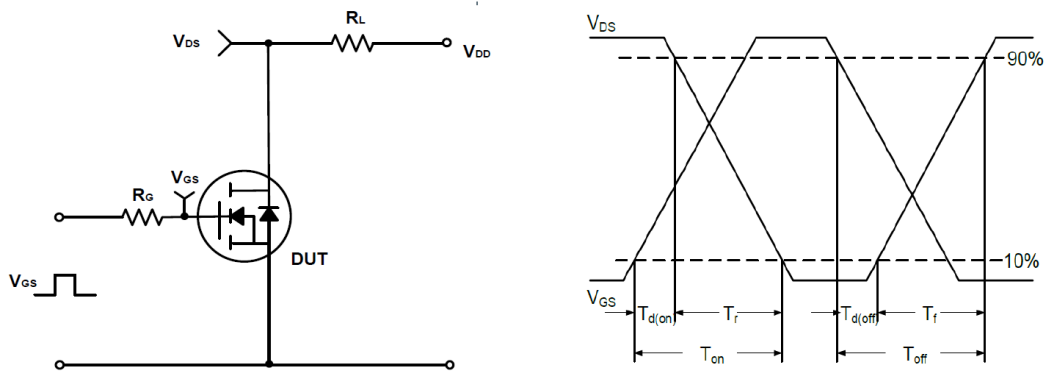


Figure B Switching Test Circuit & Waveforms

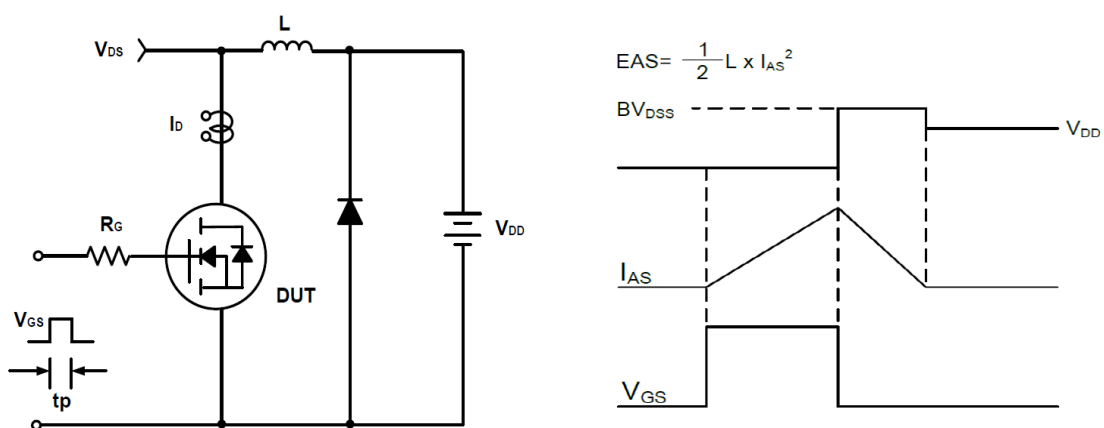
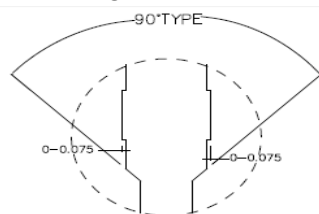


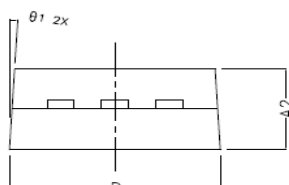
Figure C Unclamped Inductive Switching Circuit & Waveforms

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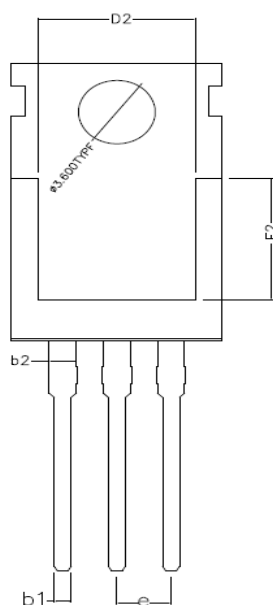
TO-220 Package Outline Dimensions (Units: mm)



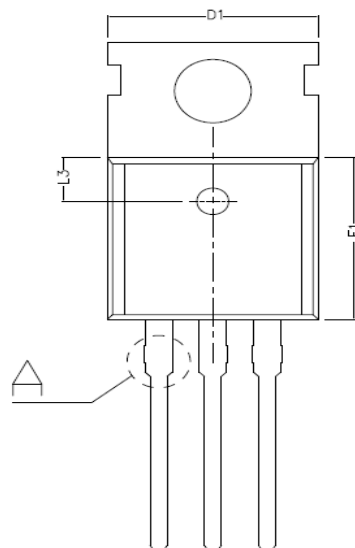
DETAIL A



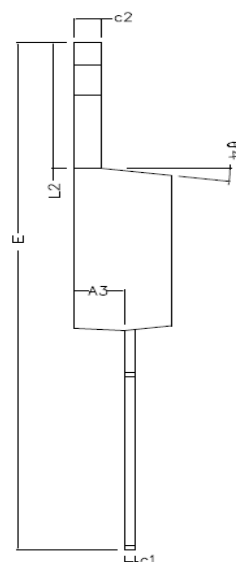
SIDE VIEW



BOTTOM VIEW



TOP VIEW



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	0.800	0.850
b2	1.27 TYPE		
c1	0.450	0.500	0.550
c2	1.250	1.300	1.380
D	9.900	10.000	10.100
D1	10.000TYPE		
D2	8.000TYPE		
E	28.660	28.860	29.060
E1	9.000	9.100	9.200
E2	7.000TYPE		
e	2.540TYPE		
L2	6.350	6.500	6.650
L3	2.50TYPE		
θ1	3° TYPE		
θ2	3° TYPE		
θ3	7° TYPE		
θ4	7° TYPE		