Preferred Device

Advance Information

Power MOSFET 4 Amps, 600 Volts

N-Channel DPAK

Designed for high voltage, high speed switching applications in power supplies, converters, power motor controls and bridge circuits.

Features

- Higher Current Rating
- Lower RDS(on)
- Lower Capacitances
- Lower Total Gate Charge
- ullet Tighter V_{SD} Specifications
- Avalanche Energy Specified
- Industry Standard DPAK Surface Mount Package

Typical Applications

- Switch Mode Power Supplies
- PWM Motor Controls
- Converters
- Bridge Circuits

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	600	Vdc
Drain–Gate Voltage (R _{GS} = 1.0 MΩ)	VDGR	600	Vdc
Gate–Source Voltage - Continuous - Non–Repetitive (t _p ≤10 ms)	VGS VGSM	±20 ±40	Vdc
Drain – Continuous – Continuous @ 100°C – Single Pulse (t _p ≤10 μs)	I _D I _{DM}	4.0 3.0 14	Adc
Total Power Dissipation Derate above 25°C Total Power Dissipation @ T _C = 25°C	PD	96 0.77 1.75	Watts W/°C W/°C
Operating and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C
Single Drain–to–Source Avalanche Energy – Starting T _J = 25°C (V _{DD} = 100 V, V _{GS} = 10 Vdc, I _L = 4 A, L = 10 mH, R _G = 25 Ω)	E _{AS}	80	mJ
Thermal Resistance – Junction-to-Case – Junction-to-Ambient – Junction-to-Ambient (Note 1.)	R _θ JC R _θ JA R _θ JA	1.30 100 71.4	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds	TL	260	°C

 When surface mounted to an FR4 board using the minimum recommended pad size.

This document contains information on a new product. Specifications and information herein are subject to change without notice.



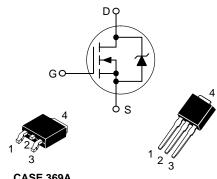
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4 AMPERES 600 VOLTS

RDS(on) = 2400 m Ω

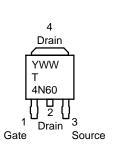
N-Channel

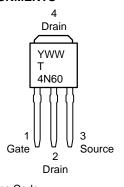


CASE 369A DPAK (Bent Lead) STYLE 2

CASE 369 DPAK (Straight Lead) STYLE 2

MARKING DIAGRAMS & PIN ASSIGNMENTS





 4N60
 = Device Code

 Y
 = Year

 WW
 = Work Week

 T
 = MOSFET

ORDERING INFORMATION

Device	Package	Shipping
NTD4N60	DPAK	75 Units/Rail
NTD4N60-1	DPAK Straight Lead	75 Units/Rail
NTD4N60T4	DPAK	2500 Tape & Reel

Preferred devices are recommended choices for future use and best overall value.

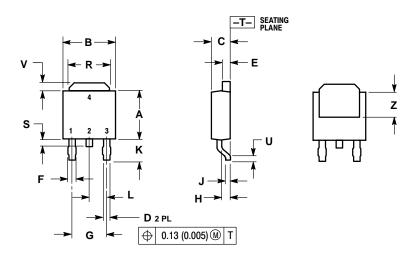
ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}C$ unless otherwise noted)

Ch	Symbol	Min	Тур	Max	Unit	
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Vo (VGS = 0 Vdc, ID = 0.25 mAc Temperature Coefficient (Pos	V(BR)DSS	600 -	- 700		Vdc mV/°C	
Zero Gate Voltage Collector Cu (VDS = 600 Vdc, VGS = 0 Vc (VDS = 600 Vdc, VGS = 0 Vc	IDSS	_ _	_ _	10 100	μAdc	
Gate-Body Leakage Current (V	IGSS(f) IGSS(r)	_ _	_ _	100 100	nAdc	
ON CHARACTERISTICS (Note 2)	•	•	•	•	
Gate Threshold Voltage ID = 0.25 mA, VDS = VGS Temperature Coefficient (Neg	VGS(th)	2.0	2.7 6.0	4.0 -	Vdc mV/°C	
Static Drain-to-Source On-Res	sistance (V _{GS} = 10 Vdc, I _D = 2 Adc)	R _{DS(on)}	-	2100	2400	mOhm
Drain-to-Source On-Voltage (VGS = 10 Vdc, I_D = 4 Adc) (VGS = 10 Vdc, I_D = 2 Adc, T	V _{DS(on)}	_ _	_ _	11.5 10.5	Vdc	
Forward Transconductance (V	_{OS} = 15 Vdc, I _D = 2 Adc)	9FS	0.7	3.8	-	mhos
DYNAMIC CHARACTERISTICS						
Input Capacitance		C _{iss}	-	540	760	pF
Output Capacitance	(V _{DS} = 25 Vdc, V _{GS} = 0 Vdc, f = 1.0 MHz)	C _{oss}	-	125	180	
Transfer Capacitance	,	C _{rss}	-	8.0	20	
SWITCHING CHARACTERISTIC	S (Note 3.)					
Turn-On Delay Time		^t d(on)	-	12	20	ns
Rise Time	$(V_{DD} = 300 \text{ Vdc}, I_{D} = 4 \text{ Adc}, V_{GS} = 10 \text{ Vdc},$	t _r	-	7.0	10	
Turn-Off Delay Time	$R_G = 9.1 \Omega$	td(off)	-	19	40	
Fall Time		t _f	-	10	20	
Gate Charge		QT	-	5.0	10	nC
	$(V_{DS} = 480 \text{ Vdc}, I_{D} = 4 \text{ Adc}, V_{GS} = 10 \text{ Vdc})$	Q ₁	-	2.7	-	
		Q ₂	-	2.0	-	
		Q_3	-	6.0	-	
SOURCE-DRAIN DIODE CHAR	ACTERISTICS	•	•		•	
Forward On–Voltage (Note 2.)	(I _S = 4 Adc, V _{GS} = 0 Vdc) (I _S = 4 Adc, V _{GS} = 0 Vdc, T _J = 125°C)	V _{SD}	_ _	0.86 0.75	1.0	Vdc
Reverse Recovery Time		t _{rr}	_	655	_	ns
•	(I _S = 4 Adc, V _{GS} = 0 Vdc,	t _a	-	103	-	
	$(ig = 4 \text{ Adc}, \forall gg = 0 \text{ Vdc},$ $dig/dt = 100 \text{ A/}\mu\text{s})$		_	552	_	
Reverse Recovery Stored Charge		Q _{RR}	-	1.9	-	μС
		1		1		

Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
 Switching characteristics are independent of operating junction temperature.

PACKAGE DIMENSIONS

DPAK CASE 369A-13 **ISSUE AA**



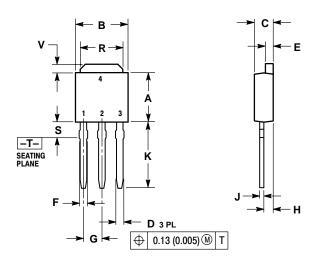
- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN MAX	
Α	0.235	0.250	5.97	6.35
В	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
Е	0.033	0.040	0.84	1.01
F	0.037	0.047	0.94	1.19
G	0.180 BSC		4.58 BSC	
Н	0.034	0.040	0.87	1.01
7	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.175	0.215	4.45	5.46
S	0.020	0.050	0.51	1.27
U	0.020		0.51	
٧	0.030	0.050	0.77	1.27
Z	0.138		3.51	

- STYLE 2: PIN 1. GATE 2. DRAIN 3. SOURCE 4. DRAIN

PACKAGE DIMENSIONS

DPAK CASE 369-07 ISSUE M



NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14 5M 1982
- CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
Α	0.235	0.250	5.97	6.35
В	0.250	0.265	6.35	6.73
С	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.033	0.040	0.84	1.01
F	0.037	0.047	0.94	1.19
G	0.090	0.090 BSC		BSC
Н	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.350	0.380	8.89	9.65
R	0.175	0.215	4.45	5.46
S	0.050	0.090	1.27	2.28
٧	0.030	0.050	0.77	1.27

STYLE 2:

PIN 1. GATE 2.

DRAIN

SOURCE

DRAIN

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