

MOSFET – Power, N-Channel, DPAK/IPAK

9.0 A, 60 V

NTD3055-150, NVD3055-150

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

Features

- NVD Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

Typical Applications

- Power Supplies
- Converters
- Power Motor Controls
- Bridge Circuits

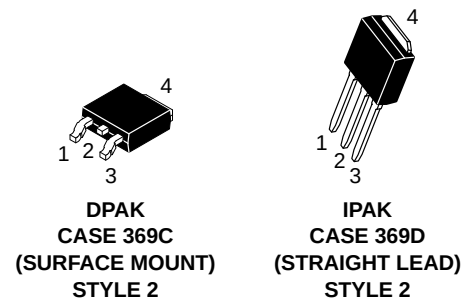
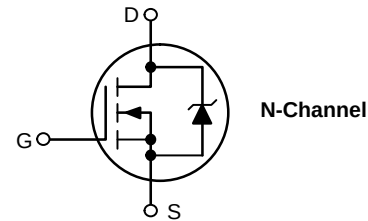
MAXIMUM RATINGS (T_J = 25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	60	Vdc
Drain-to-Gate Voltage (R _{GS} = 10 MΩ)	V _{DGR}	60	Vdc
Gate-to-Source Voltage	V _{GS}	±20	Vdc
– Continuous	V _{GS}	±30	
– Non-repetitive (t _p ≤ 10 ms)			
Drain Current	I _D	9.0	Adc
– Continuous @ T _A = 25 °C	I _D	3.0	
– Continuous @ T _A = 100 °C	I _{DM}	27	Apk
– Single Pulse (t _p ≤ 10 μs)			
Total Power Dissipation @ T _A = 25 °C	P _D	28.8	W
Derate above 25 °C		0.19	W/°C
Total Power Dissipation @ T _A = 25 °C (Note 1)		2.1	W
Total Power Dissipation @ T _A = 25 °C (Note 2)		1.5	W
Operating and Storage Temperature Range	T _J , T _{stg}	–55 to 175	°C
Single Pulse Drain-to-Source Avalanche Energy – Starting T _J = 25 °C (V _{DD} = 25 Vdc, V _{GS} = 10 Vdc, L = 1.0 mH, I _L (pk) = 7.75 A, V _{DS} = 60 Vdc)	E _{AS}	30	mJ
Thermal Resistance	R _{θJC}	5.2	°C/W
– Junction-to-Case	R _{θJA}	71.4	
– Junction-to-Ambient (Note 1)	R _{θJA}	100	
– Junction-to-Ambient (Note 2)			
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds	T _L	260	°C

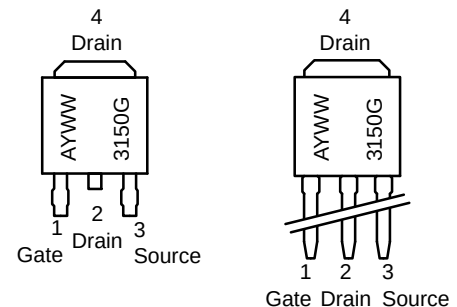
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. When surface mounted to an FR4 board using 0.5 sq in pad size.
2. When surface mounted to an FR4 board using minimum recommended pad size.

9.0 AMPERES, 60 VOLTS
R_{DS(on)} = 122 mΩ (Typ)



MARKING DIAGRAMS & PIN ASSIGNMENTS



A = Assembly Location*
3150 = Device Code
Y = Year
WW = Work Week
G = Pb-Free Package

* The Assembly Location code (A) is front side optional. In cases where the Assembly Location is stamped in the package, the front side assembly code may be blank.

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 5.

NTD3055-150, NVD3055-150

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

Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage (Note 3) (V _{GS} = 0 Vdc, I _D = 250 μAdc) Temperature Coefficient (Positive)	V _{(BR)DSS}	60 –	– 70.2	– –	Vdc mV/°C	
Zero Gate Voltage Drain Current (V _{DS} = 60 Vdc, V _{GS} = 0 Vdc) (V _{DS} = 60 Vdc, V _{GS} = 0 Vdc, T _J = 150 °C)	I _{DSS}	– –	– –	1.0 10	μAdc	
Gate-Body Leakage Current (V _{GS} = ±20 Vdc, V _{DS} = 0 Vdc)	I _{GSS}	–	–	±100	nAdc	
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage (Note 3) (V _{DS} = V _{GS} , I _D = 250 μAdc) Threshold Temperature Coefficient (Negative)	V _{GS(th)}	2.0 –	3.0 6.4	4.0 –	Vdc mV/°C	
Static Drain-to-Source On-Resistance (Note 3) (V _{GS} = 10 Vdc, I _D = 4.5 Adc)	R _{DS(on)}	–	122	150	mΩ	
Static Drain-to-Source On-Voltage (Note 3) (V _{GS} = 10 Vdc, I _D = 9.0 Adc) (V _{GS} = 10 Vdc, I _D = 4.5 Adc, T _J = 150 °C)	V _{DS(on)}	– –	1.4 1.1	1.9 –	Vdc	
Forward Transconductance (Note 3) (V _{DS} = 7.0 Vdc, I _D = 6.0 Adc)	g _{FS}	–	5.4	–	mhos	
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V _{DS} = 25 Vdc, V _{GS} = 0 Vdc, f = 1.0 MHz)	C _{iss}	–	200	280	pF
Output Capacitance		C _{oss}	–	70	100	
Transfer Capacitance		C _{rss}	–	26	40	
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	(V _{DD} = 48 Vdc, I _D = 9.0 Adc, V _{GS} = 10 Vdc, R _G = 9.1 Ω) (Note 3)	t _{d(on)}	–	11.2	25	ns
Rise Time		t _r	–	37.1	80	
Turn-Off Delay Time		t _{d(off)}	–	12.2	25	
Fall Time		t _f	–	23	50	
Gate Charge	(V _{DS} = 48 Vdc, I _D = 9.0 Adc, V _{GS} = 10 Vdc) (Note 3)	Q _T	–	7.1	15	nC
		Q ₁	–	1.7	–	
		Q ₂	–	3.5	–	
SOURCE-DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage	(I _S = 9.0 Adc, V _{GS} = 0 Vdc) (Note 3) (I _S = 19 Adc, V _{GS} = 0 Vdc, T _J = 150 °C)	V _{SD}	– –	0.98 0.86	1.20 –	Vdc
Reverse Recovery Time	(I _S = 9.0 Adc, V _{GS} = 0 Vdc, dI _S /dt = 100 A/μs) (Note 3)	t _{rr}	–	28.9	–	ns
		t _a	–	21.6	–	
		t _b	–	7.3	–	
Reverse Recovery Stored Charge		Q _{RR}		0.036	–	μC

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$.

4. Switching characteristics are independent of operating junction temperatures.

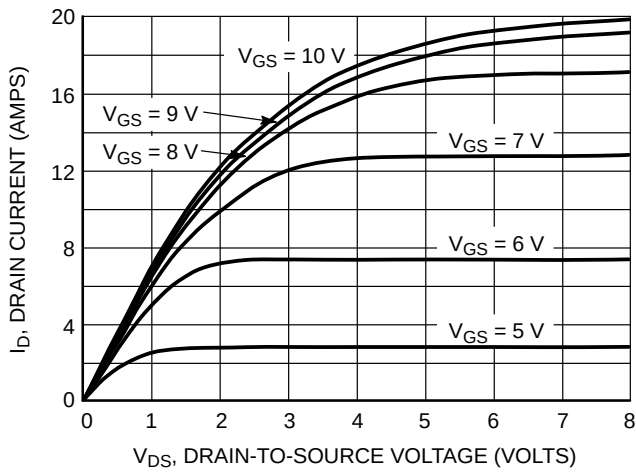


Figure 1. On-Region Characteristics

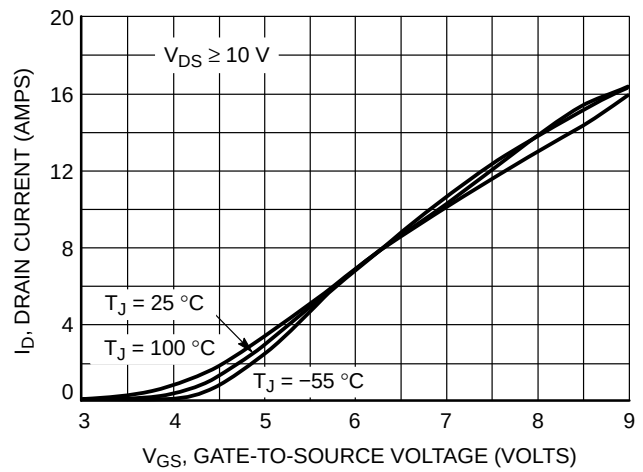


Figure 2. Transfer Characteristics

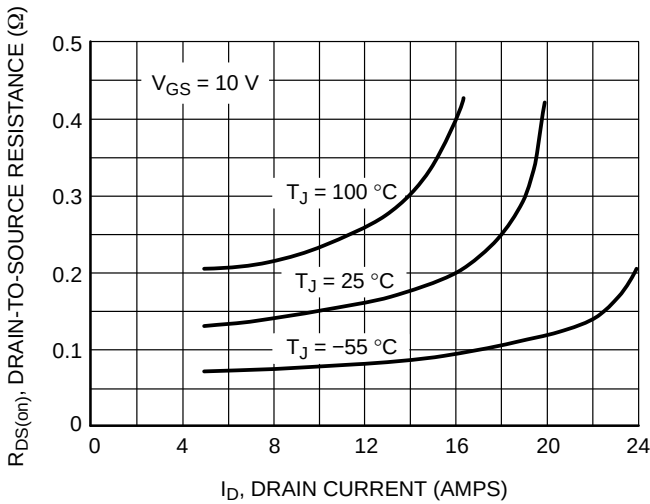


Figure 3. On-Resistance versus Gate-to-Source Voltage

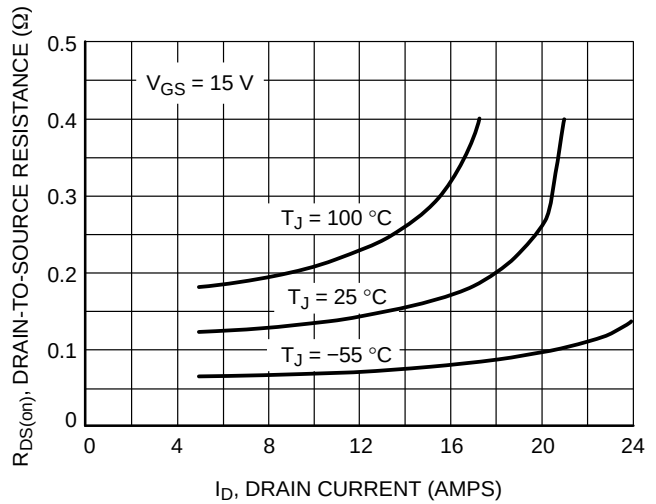


Figure 4. On-Resistance versus Drain Current and Gate Voltage

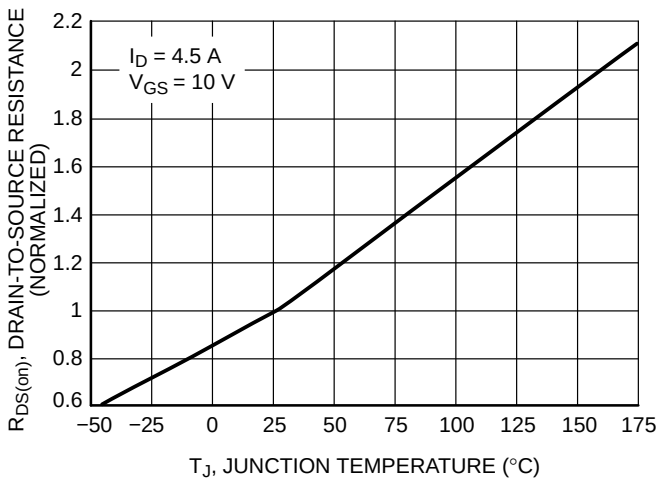


Figure 5. On-Resistance Variation with Temperature

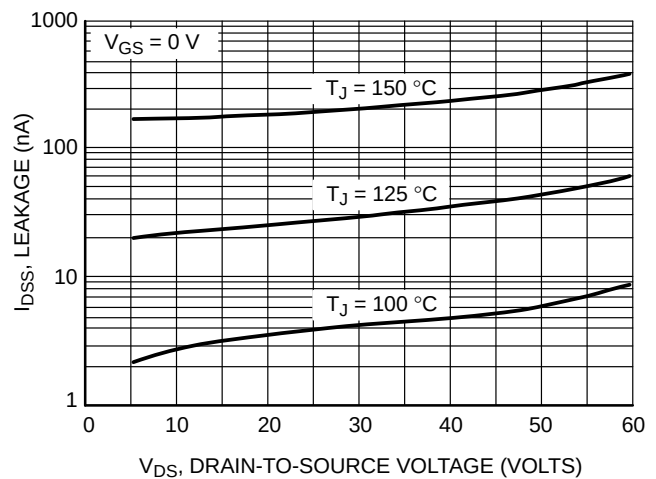


Figure 6. Drain-To-Source Leakage Current versus Voltage

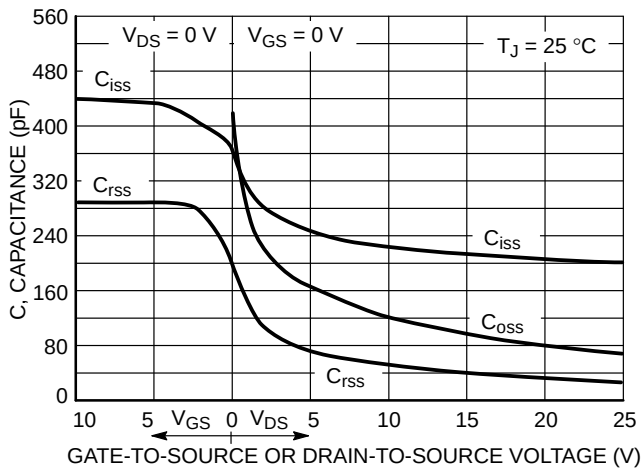


Figure 7. Capacitance Variation

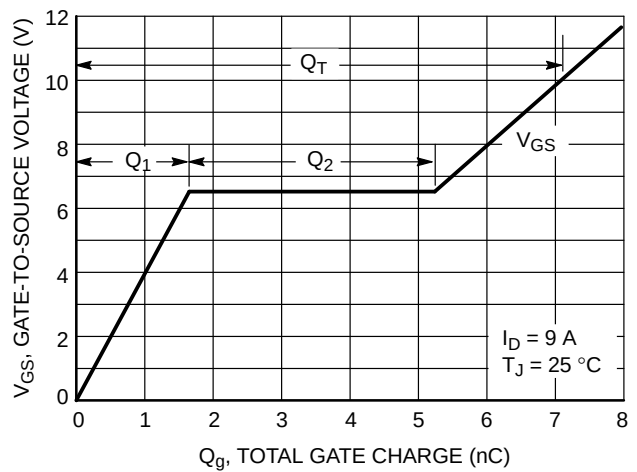


Figure 8. Gate-to-Source and Drain-to-Source Voltage versus Total Charge

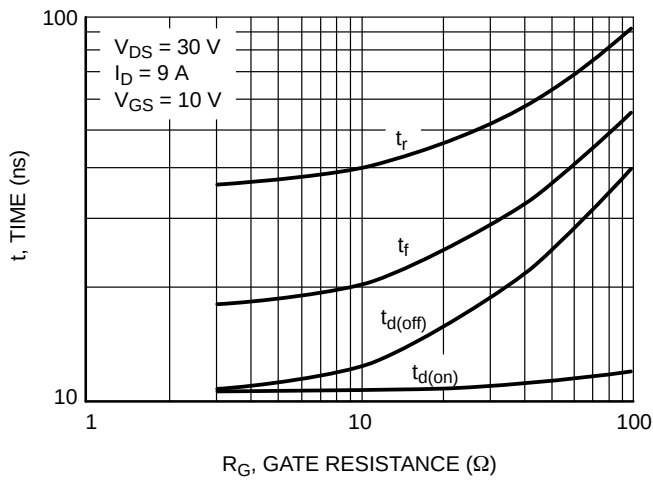


Figure 9. Resistive Switching Time Variation versus Gate Resistance

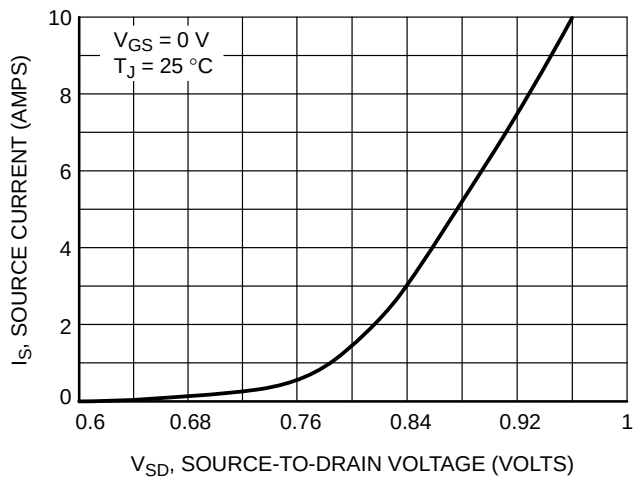


Figure 10. Diode Forward Voltage versus Current

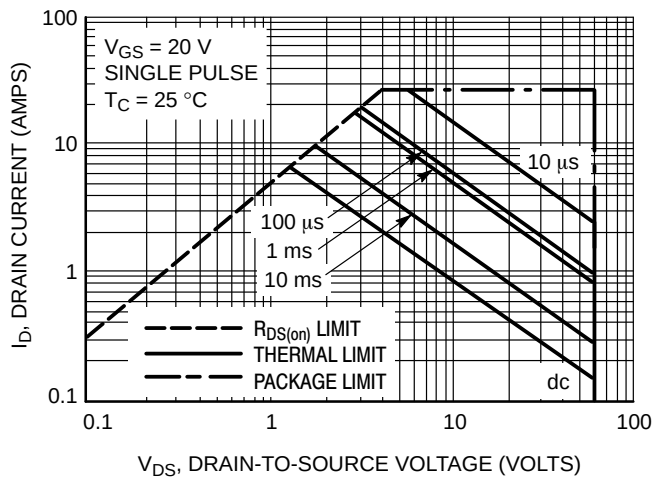


Figure 11. Maximum Rated Forward Biased Safe Operating Area

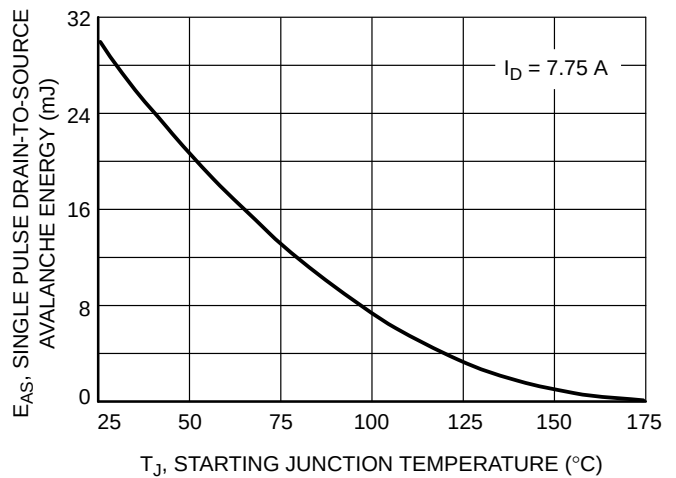


Figure 12. Maximum Avalanche Energy versus Starting Junction Temperature

NTD3055-150, NVD3055-150

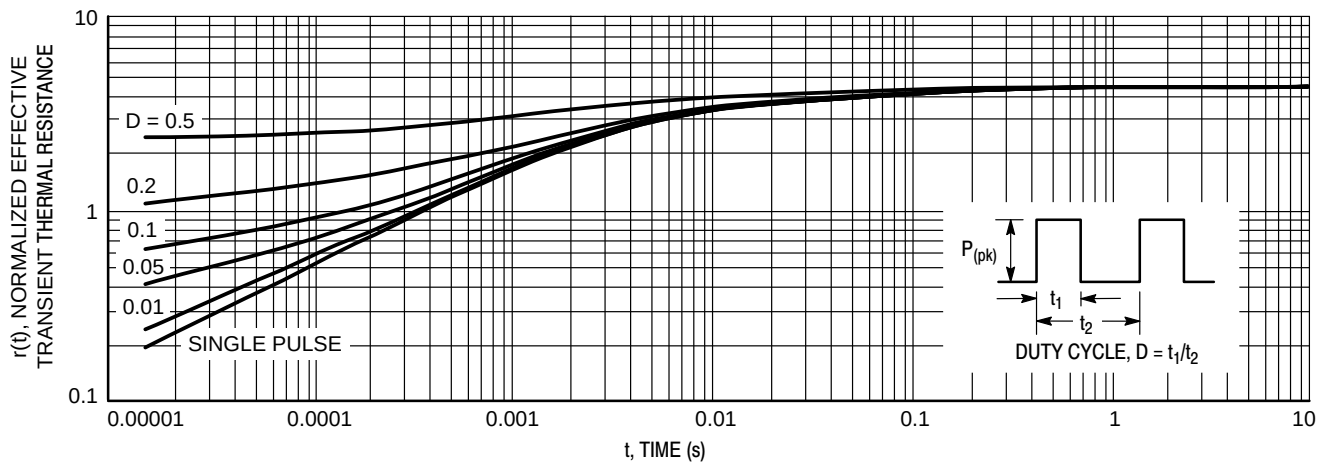


Figure 13. Thermal Response

ORDERING INFORMATION

Device	Package	Shipping [†]
NTD3055-150T4G	DPAK (Pb-Free)	2500 / Tape & Reel
NVD3055-150T4G-VF01	DPAK (Pb-Free)	2500 / Tape & Reel

DISCONTINUED (Note 5)

NTD3055-150G	DPAK (Pb-Free)	75 Units / Rail
NTD3055-150-1G	IPAK (Pb-Free)	75 Units / Rail
NTD3055-150T4H	DPAK (Halide-Free)	2500 / Tape & Reel
NVD3055-150T4G*	DPAK (Pb-Free)	2500 / Tape & Reel

[†] For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

* NVD Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

5. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

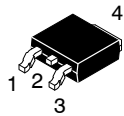
NTD3055-150, NVD3055-150

REVISION HISTORY

Revision	Description of Changes	Date
8	Rebranded the document to onsemi format. NTD3055-150G, NTD3055-150-1G, NTD3055-150T4H, NVD3055-150T4G OPNs marked as Discontinued.	2/16/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

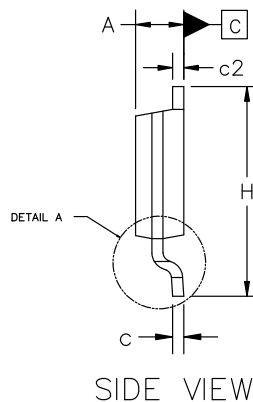
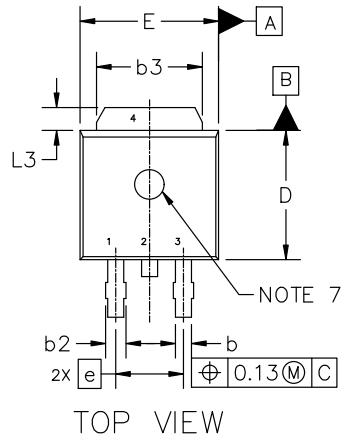




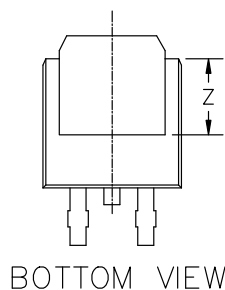
DPAK-3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE K

DATE 14 MAY 2026

SCALE 1:1



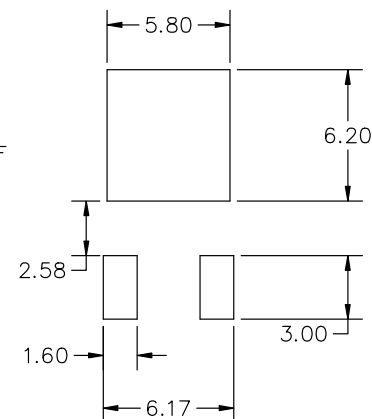
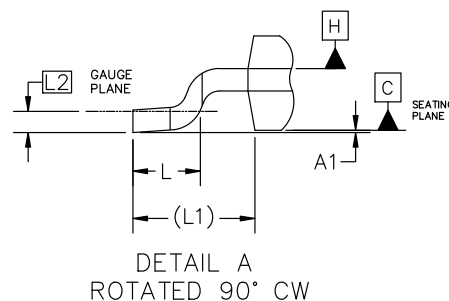
MILLIMETERS			
DIM	MIN	NOM	MAX
A	2.18	2.28	2.38
A1	0.00	---	0.13
b	0.63	0.76	0.89
b2	0.72	0.93	1.14
b3	4.57	5.02	5.46
c	0.46	0.54	0.61
c2	0.46	0.54	0.61
D	5.97	6.10	6.22
E	6.35	6.54	6.73
e	2.29 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	---	1.27
L4	---	---	1.01
Z	3.93	---	---



ALTERNATE CONSTRUCTIONS

NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.



RECOMMENDED MOUNTING FOOTPRINT*

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

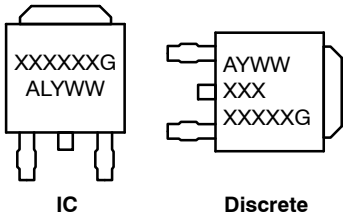
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DPAK–3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE K

DATE 13 MAY 2026

**GENERIC
MARKING DIAGRAM***



- XXXXXX = Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb–Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb–Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1: PIN 1. BASE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 2: PIN 1. GATE 2. DRAIN 3. SOURCE 4. DRAIN	STYLE 3: PIN 1. ANODE 2. CATHODE 3. ANODE 4. CATHODE	STYLE 4: PIN 1. CATHODE 2. ANODE 3. GATE 4. ANODE	STYLE 5: PIN 1. GATE 2. ANODE 3. CATHODE 4. ANODE
STYLE 6: PIN 1. MT1 2. MT2 3. GATE 4. MT2	STYLE 7: PIN 1. GATE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 8: PIN 1. N/C 2. CATHODE 3. ANODE 4. CATHODE	STYLE 9: PIN 1. ANODE 2. CATHODE 3. RESISTOR ADJUST 4. CATHODE	STYLE 10: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. ANODE

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