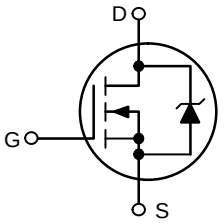
MOSFET – Power, N-Channel, DPAK/IPAK

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.

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



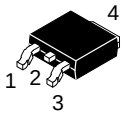
N-Channel

Features

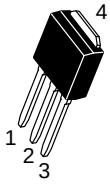
- NVD Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

Typical Applications

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



DPAK
CASE 369C
(SURFACE MOUNT)
STYLE 2



IPAK
CASE 369D
(STRAIGHT LEAD)
STYLE 2

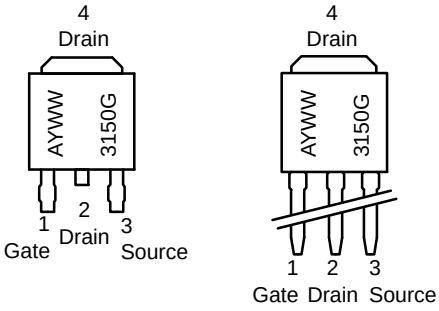
MAXIMUM RATINGS (T_J = 25 °C unless otherwise noted)

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 − Continuous − Non-repetitive ($t_p \le 10$ ms)	 V_{GS} V_{GS}	 ±20 ±30	Vdc
Drain Current − Continuous @ T_A = 25 °C − Continuous @ T_A = 100 °C − Single Pulse ($t_p \le 10$ μs)	 I_D I_D I_{DM}	 9.0 3.0 27	Adc Apk
Total Power Dissipation @ T_A = 25 °C Derate above 25 °C Total Power Dissipation @ T_A = 25 °C (Note 1) Total Power Dissipation @ T_A = 25 °C (Note 2)	P_D	28.8 0.19 2.1 1.5	W W/°C W 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 − Junction-to-Case − Junction-to-Ambient (Note 1) − Junction-to-Ambient (Note 2)	 $R_{\theta JC}$ $R_{\theta JA}$ $R_{\theta JA}$	 5.2 71.4 100	°C/W
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.

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.

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ELECTRICAL CHARACTERISTICS (T_J = 25 °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 ≤ 300 μs, Duty Cycle ≤ 2%.
4. Switching characteristics are independent of operating junction temperatures.

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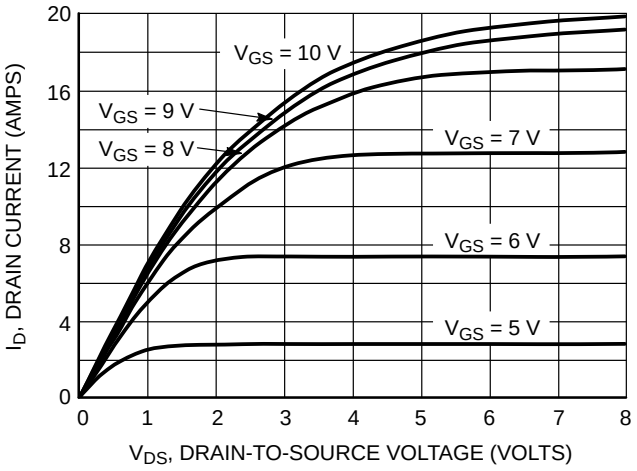

Figure 1. On-Region Characteristics

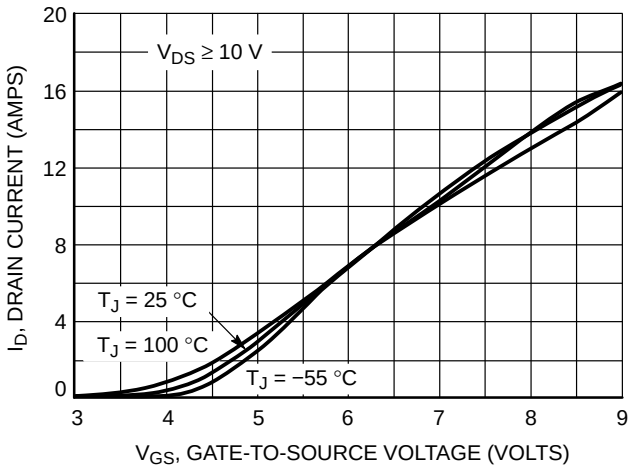

Figure 2. Transfer Characteristics

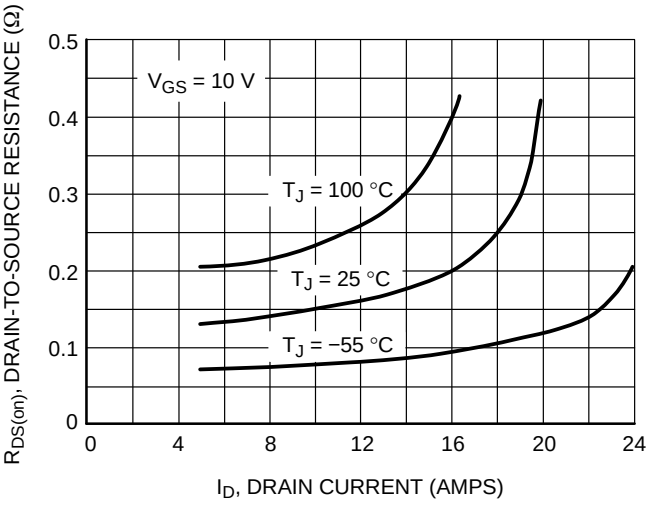

Figure 3. On-Resistance versus Gate-To-Source Voltage

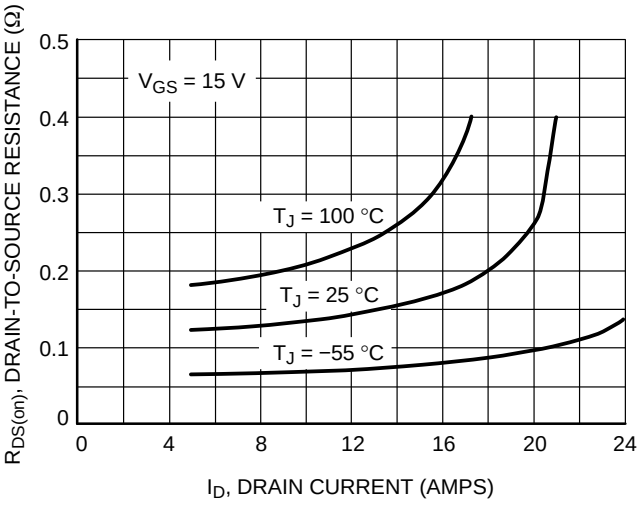

Figure 4. On-Resistance versus Drain Current and Gate Voltage

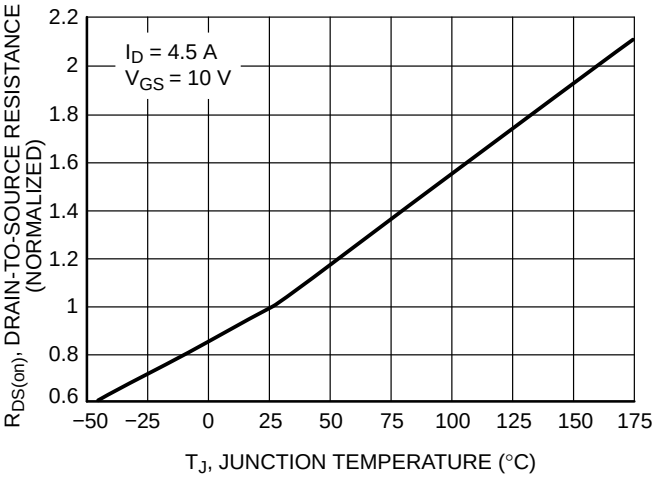

Figure 5. On-Resistance Variation with Temperature

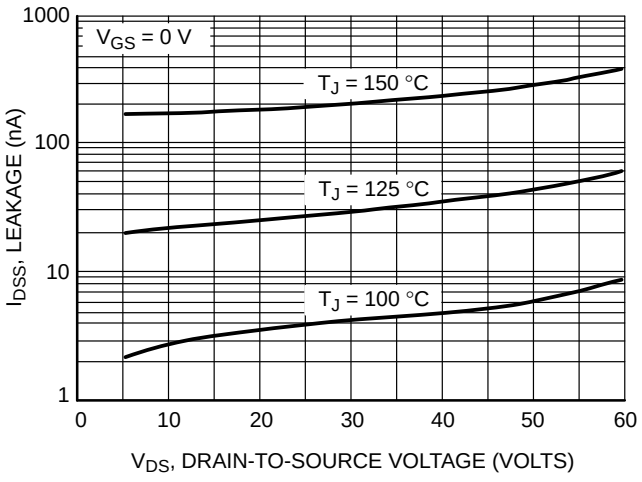

Figure 6. Drain-To-Source Leakage Current versus Voltage

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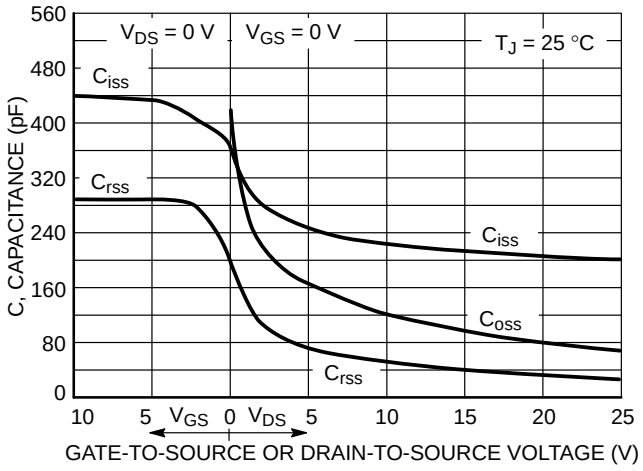

Figure 7. Capacitance Variation

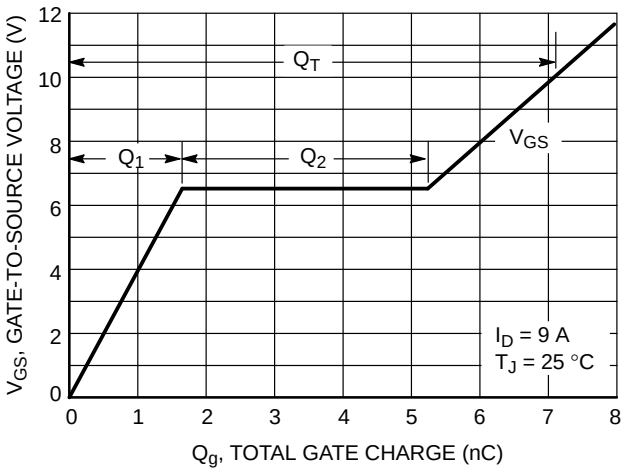

Figure 8. Gate-to-Source and Drain-to-Source Voltage versus Total Charge

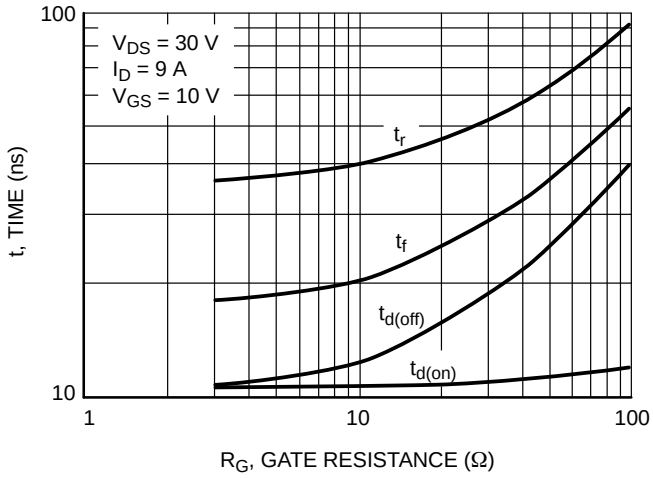

Figure 9. Resistive Switching Time Variation versus Gate Resistance

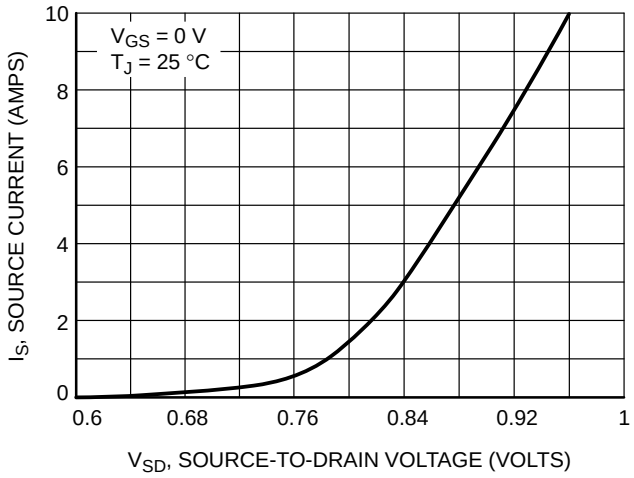

Figure 10. Diode Forward Voltage versus Current

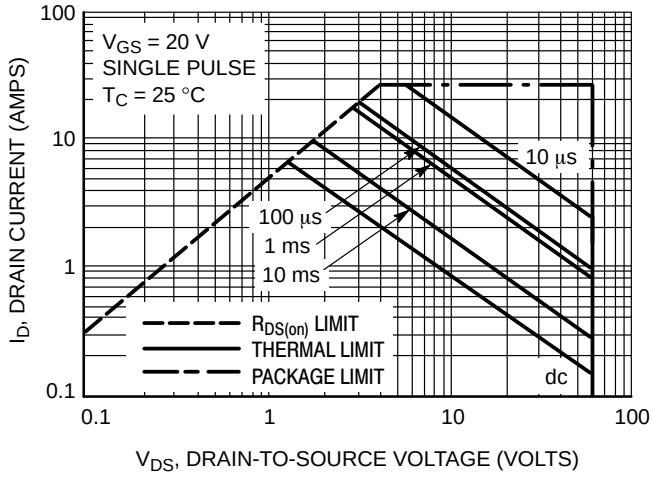

Figure 11. Maximum Rated Forward Biased Safe Operating Area

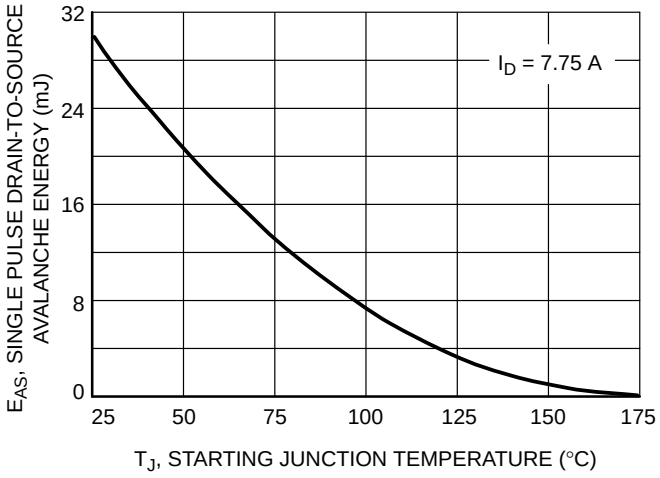

Figure 12. Maximum Avalanche Energy versus Starting Junction Temperature

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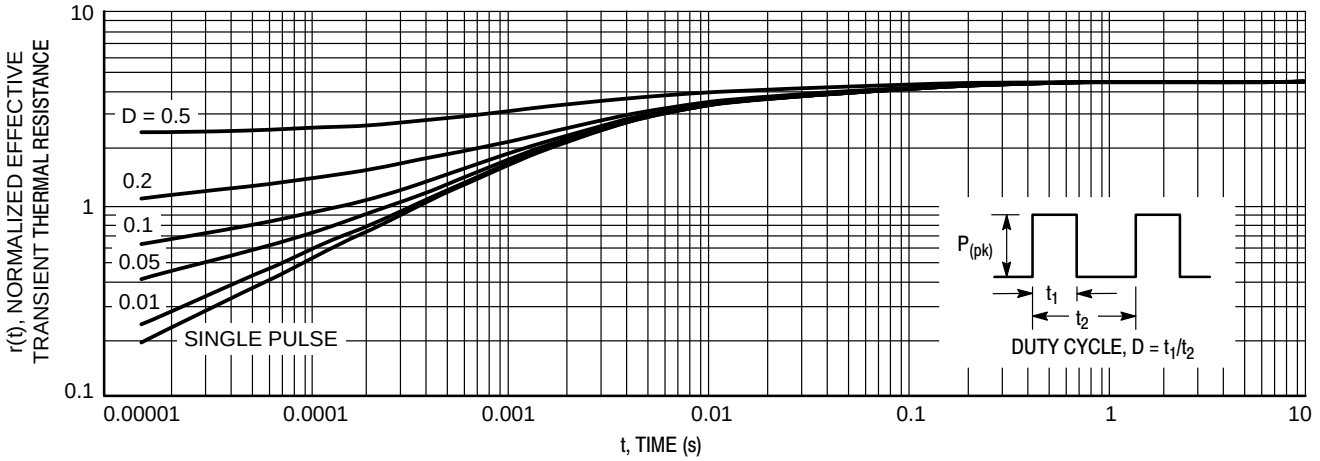

Figure 13. Thermal Response

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.

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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.

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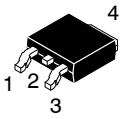
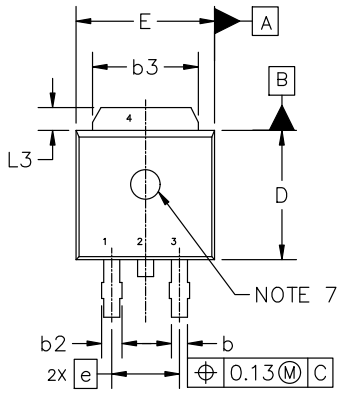


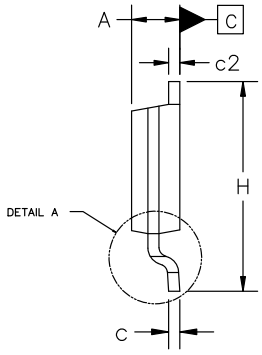
DPAK−3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE K

DATE 14 MAY 2026

SCALE 1:1

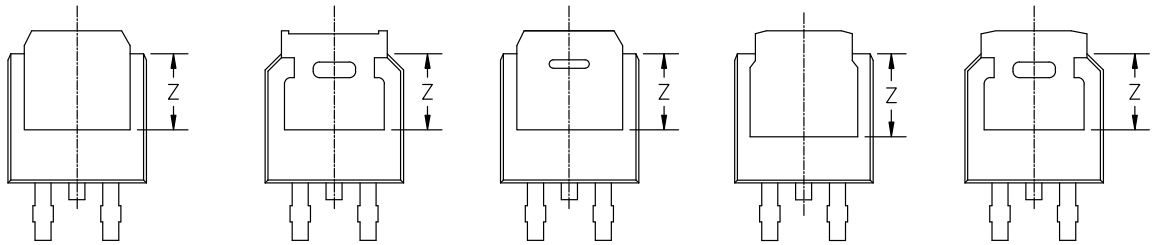


TOP VIEW



SIDE VIEW

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	−−−	−−−

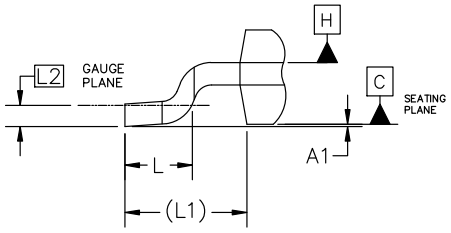


BOTTOM VIEW

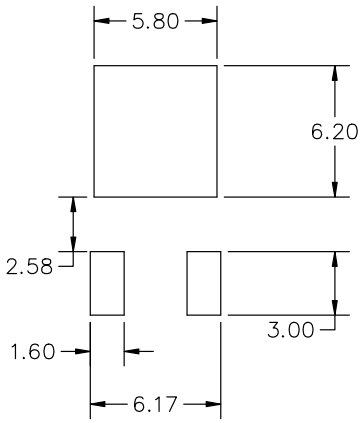
ALTERNATE CONSTRUCTIONS

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.



DETAIL A
ROTATED 90° CW



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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DESCRIPTION:	**DPAK−3 6.10x6.54x2.28, 2.29P**	**PAGE 1 OF 2**

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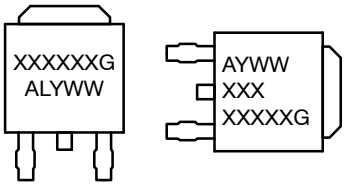
DPAK−3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE K

DATE 13 MAY 2026

GENERIC MARKING DIAGRAM*



IC **Discrete**

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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