VOLTAGE DETECTORS

FEATURES

- **Qualified for Automotive Applications**
- **Single Voltage Detector (TPS3803): Adjustable/1.5 V**
- **Dual Voltage Detector (TPS3805): Adjustable/3.3 V**
- **High ±1.5% Threshold Voltage Accuracy**
- **Supply Current: 3 μA Typical at V_{DD} = 3.3 V**
- **Push/Pull Reset Output (TPS3805), Open-Drain Reset Output (TPS3803)**
- **Temperature Range: –40°C to 125°C**
- **5-Pin SC-70 Package**

APPLICATIONS

- **Applications Using DSPs, Microcontrollers, or Microprocessors**
- **Wireless Communication Systems**
- **Portable/Battery-Powered Equipment**
- **Programmable Controls**
- **Intelligent Instruments**
- **Industrial Equipment**
- **Notebook/Desktop Computers**
- **Automotive Systems**

DESCRIPTION

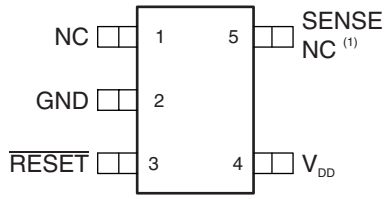
The TPS3803 and TPS3805 families of supervisory circuits provide circuit initialization and timing supervision, primarily for DSPs and processor-based systems.

The TPS3803G15 device has a fixed-sense threshold voltage V_{IT} set by an internal voltage divider, whereas the TPS3803-01 has an adjustable SENSE input that can be configured by two external resistors. In addition to the fixed sense threshold monitored at V_{DD}, the TPS3805 devices provide a second adjustable SENSE input. $\overline{\text{RESET}}$ is asserted in case either of the two voltages drops below V_{IT}.

During power on, $\overline{\text{RESET}}$ is asserted when supply voltage V_{DD} becomes higher than 0.8 V. Thereafter, the supervisory circuit monitors V_{DD} (and/or SENSE) and keeps $\overline{\text{RESET}}$ active as long as V_{DD} or SENSE remains below the threshold voltage V_{IT}. As soon as V_{DD} (SENSE) rises above the threshold voltage V_{IT}, $\overline{\text{RESET}}$ is deasserted again. The product spectrum is designed for 1.5 V, 3.3 V, and adjustable supply voltages.

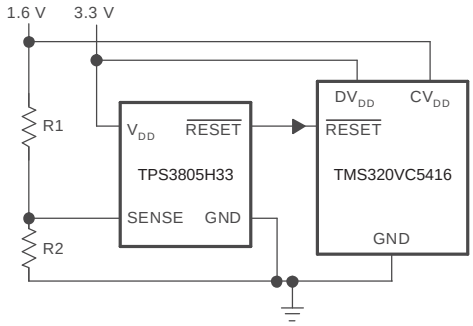
The devices are available in a 5-pin SC-70 package. The TPS3803 and TPS3805 devices are characterized for operation over a temperature range of –40°C to 125°C.

DCK PACKAGE
(TOP VIEW)



NC – No connection

(1) SENSE on TPS3803-01, TPS3805H33
NC on TPS3803G15



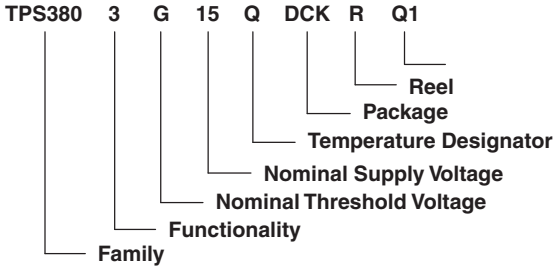
This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

ORDERING INFORMATION(1)

T_A	THRESHOLD VOLTAGE		PACKAGE(2)		ORDERABLE PART NUMBER	TOP-SIDE MARKING
	V_{DD}	SENSE				
–40°C to 125°C	NA	1.226 V	SC-70 – DCK	Reel of 3000	TPS3803-01QDCKRQ1	AWJ
	1.4 V	NA			TPS3803G15QDCKRQ1	AXU
	3.05 V	1.226 V			TPS3805H33QDCKRQ1	AWZ

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
(2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.



FUNCTION/TRUTH TABLE

TPS3803-01	
SENSE > V_{IT}	$\overline{\text{RESET}}$
0	L
1	H

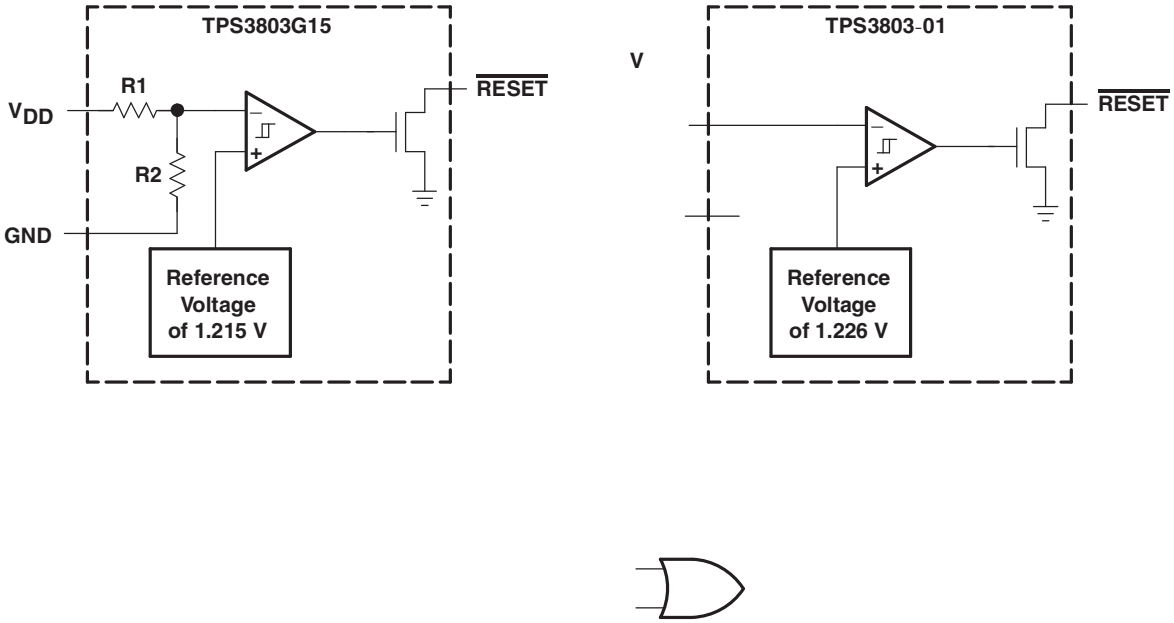
FUNCTION/TRUTH TABLE

TPS3803G15	
V_{DD} > V_{IT}	$\overline{\text{RESET}}$
0	L
1	H

FUNCTION/TRUTH TABLE

TPS3805H33		
V_{DD} > V_{IT}	SENSE > V_{IT}	$\overline{\text{RESET}}$
0	0	L
0	1	L
1	0	L
1	1	H

FUNCTIONAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS(1)

ELECTRICAL

TYPICAL CHARACTERISTICS

TPS3805H33
SUPPLY CURRENT
vs
SUPPLY VOLTAGE

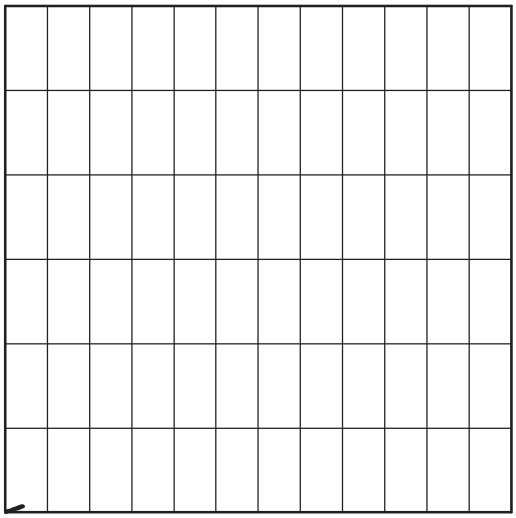


Figure 1.

TPS3803-01
SUPPLY CURRENT
vs
SUPPLY VOLTAGE

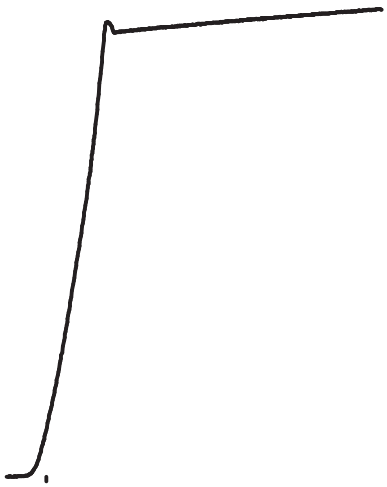


Figure 2.

LOW-LEVEL OUTPUT VOLTAGE
vs
LOW-LEVEL OUTPUT CURRENT

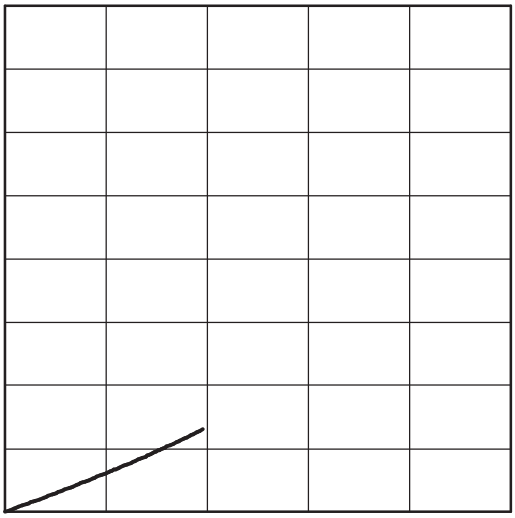


Figure 3.

LOW-LEVEL OUTPUT VOLTAGE
vs
LOW-LEVEL OUTPUT CURRENT

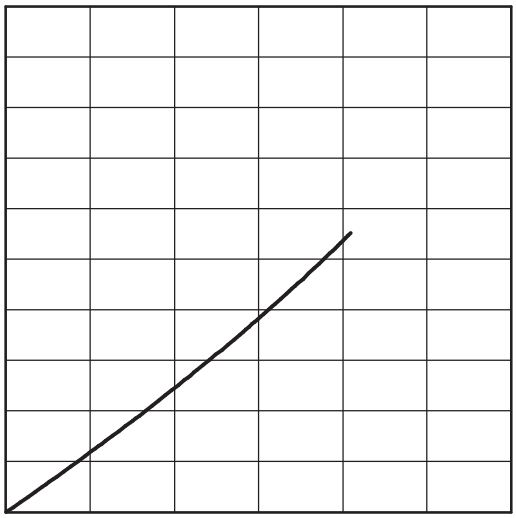
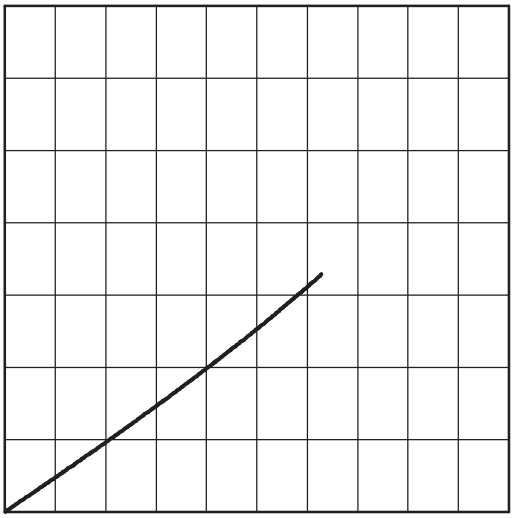
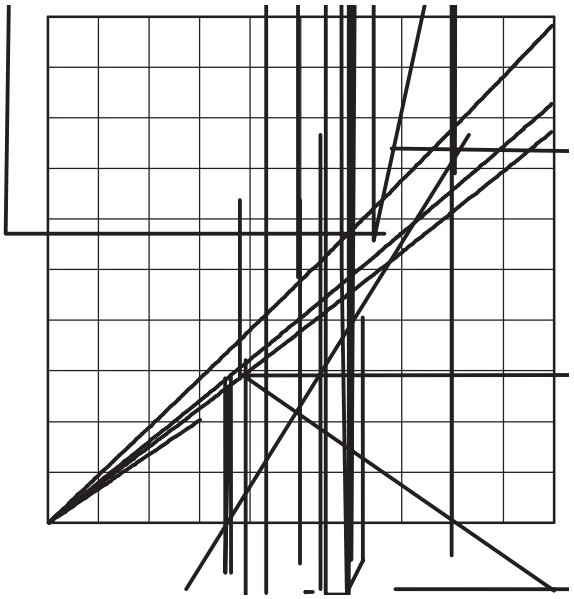
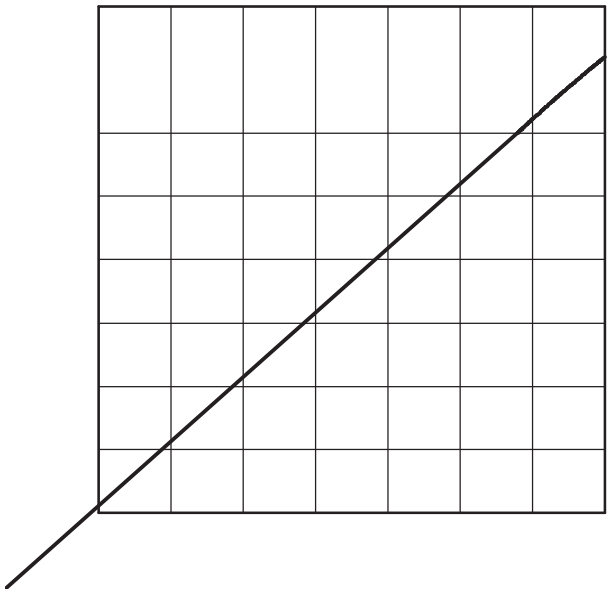


Figure 4.

TYPICAL CHARACTERISTICS (continued)







TYPICAL CHARACTERISTICS (continued)

TPS3805H33
HIGH-LEVEL OUTPUT VOLTAGE
vs
HIGH-LEVEL OUTPUT CURRENT

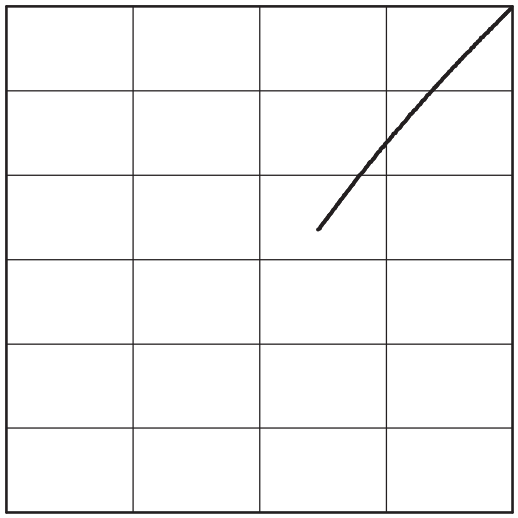


Figure 9.

TPS3805H33
HIGH-LEVEL OUTPUT VOLTAGE
vs
HIGH-LEVEL OUTPUT CURRENT

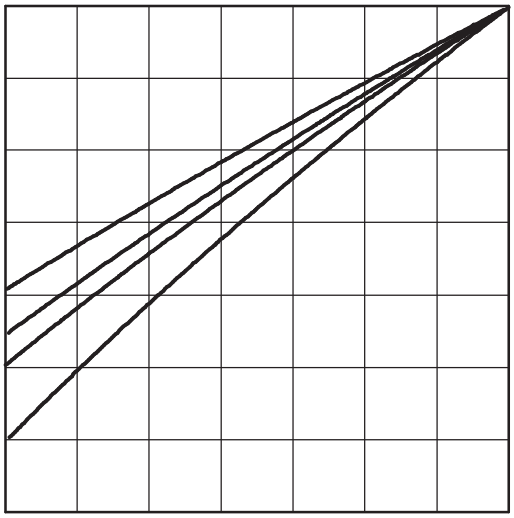


Figure 10.

TPS3803-01
NORMALIZED INPUT THRESHOLD VOLTAGE
vs
FREE-AIR TEMPERATURE AT SENSE

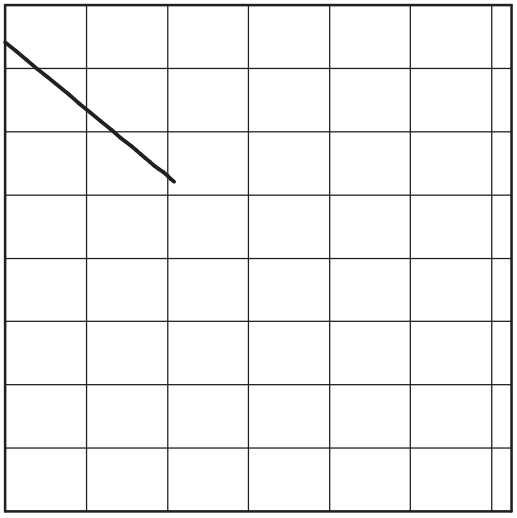


Figure 11.

MINIMUM PULSE DURATION AT V_{DD}
vs
V_{DD} THRESHOLD OVERDRIVE VOLTAGE

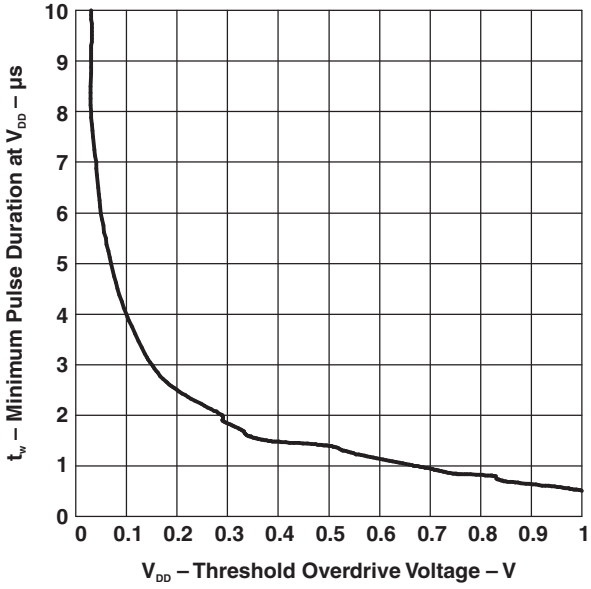


Figure 12.

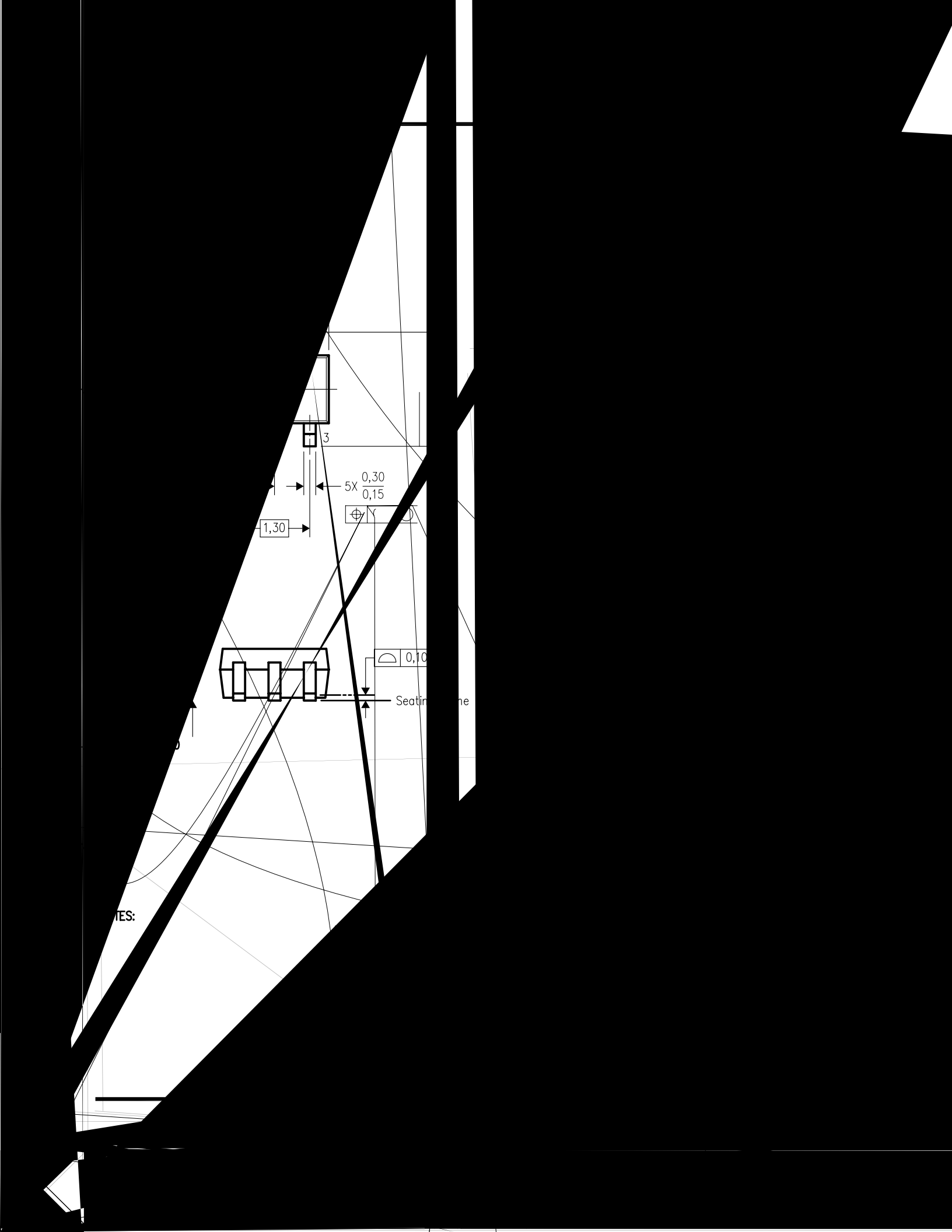
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF TPS3803-01-Q1, TPS3803G15-Q1, TPS3805H33-Q1 :

- Catalog: TPS3803-01, TPS3803G15, TPS3805H33
- Enhanced Product: TPS3803-01-EP, TPS3803G15-EP, TPS3805H33-EP

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Enhanced Product - Supports Defense, Aerospace and Medical Applications



TES:

LAND PATTE

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linear dimensions ar

hange without notice.

should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.

PC-7351 is recommended for alternate designs.

rtures with trape

assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric

Refer to IPC-7525 for other stencil recommendations.

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