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With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

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N-Channel Enhancement-Mode Vertical DMOS FET

Features

- ▶ Free from secondary breakdown
- ▶ Low power drive requirement
- ▶ Ease of paralleling
- ▶ Low C_{iss} and fast switching speeds
- ▶ Excellent thermal stability
- ▶ Integral source-drain diode
- ▶ High input impedance and high gain

Applications

- ▶ Motor controls
- ▶ Converters
- ▶ Amplifiers
- ▶ Switches
- ▶ Power supply circuits
- ▶ Drivers (relays, hammers, solenoids, lamps, memories, displays, bipolar transistors, etc.)

Ordering Information

Part Number	Package Option	Packing
VN1206L-G	TO-92	1000/Bag
VN1206L-G P002		
VN1206L-G P003		
VN1206L-G P005	TO-92	2000/Reel
VN1206L-G P013		
VN1206L-G P014		

-G denotes a lead (Pb)-free / RoHS compliant package.

Contact factory for Wafer / Die availability.

Devices in Wafer / Die form are lead (Pb)-free / RoHS compliant.

General Description

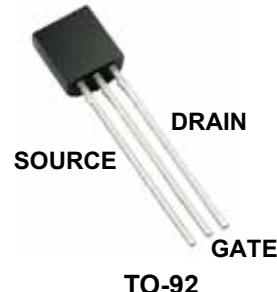
This enhancement-mode (normally-off) transistor utilizes a vertical DMOS structure and Supertex's well-proven, silicon-gate manufacturing process. This combination produces a device with the power handling capabilities of bipolar transistors and the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, this device is free from thermal runaway and thermally-induced secondary breakdown.

Supertex's vertical DMOS FETs are ideally suited to a wide range of switching and amplifying applications where very low threshold voltage, high breakdown voltage, high input impedance, low input capacitance, and fast switching speeds are desired.

Product Summary

BV_{DSS}/BV_{DGS}	$R_{DS(ON)}$ (max)	I_{DSS} (min)
120V	6.0Ω	1.0A

Pin Configuration



Product Marking



YY = Year Sealed
WW = Week Sealed
____ = "Green" Packaging

Package may or may not include the following marks: Si or TO-92

Typical Thermal Resistance

Package	θ_{ja}
TO-92	132°C/W

Thermal Characteristics

Package	I_D (continuous) [†]	I_D (pulsed)	Power Dissipation $@T_c = 25^\circ\text{C}$	I_{DR}	I_{DRM}
TO-92	230mA	2.0A	1.0W	230mA	2.0A

Notes:

[†] I_D (continuous) is limited by max rated T_j .

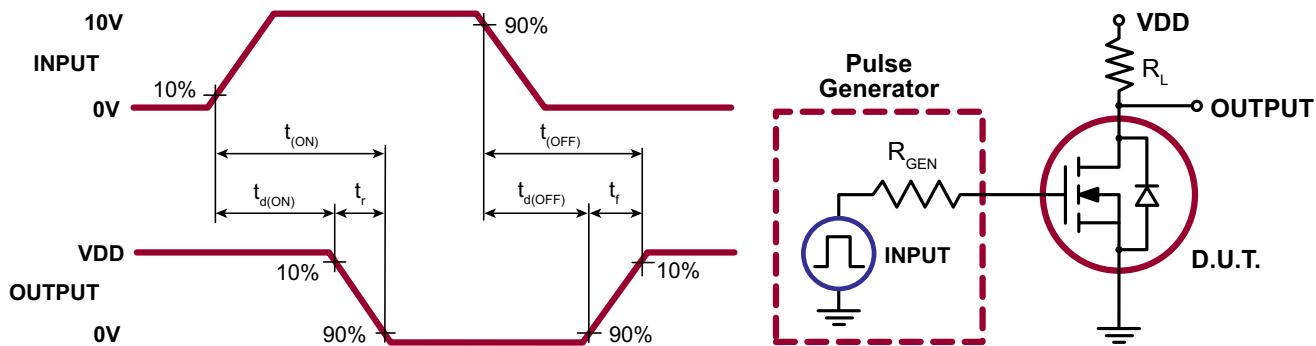
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	120	-	-	V	$V_{\text{GS}} = 0\text{V}$, $I_D = 100\mu\text{A}$
$V_{\text{GS(th)}}$	Gate threshold voltage	0.8	-	2.0	V	$V_{\text{GS}} = V_{\text{DS}}$, $I_D = 1.0\text{mA}$
I_{GSS}	Gate body leakage	-	-	100	nA	$V_{\text{GS}} = \pm 15\text{V}$, $V_{\text{DS}} = 0\text{V}$
I_{DSS}	Zero gate voltage drain current	-	-	10	μA	$V_{\text{GS}} = 0\text{V}$, $V_{\text{DS}} = \text{Max Rating}$
		-	-	500	μA	$V_{\text{DS}} = 0.8\text{Max Rating}$, $V_{\text{GS}} = 0\text{V}$, $T_A = 125^\circ\text{C}$
$I_{\text{D(ON)}}$	On-state drain current	1.0	-	-	A	$V_{\text{GS}} = 10\text{V}$, $V_{\text{DS}} = 10\text{V}$
$R_{\text{DS(ON)}}$	Static drain-to-source on-state resistance	-	-	10	Ω	$V_{\text{GS}} = 2.5\text{V}$, $I_D = 100\text{mA}$
		-	-	6.0	Ω	$V_{\text{GS}} = 10\text{V}$, $I_D = 500\text{mA}$
G_{FS}	Forward transductance	300	-	-	mmho	$V_{\text{DS}} = 10\text{V}$, $I_D = 500\text{mA}$
C_{ISS}	Input capacitance	-	-	125	pF	$V_{\text{GS}} = 0\text{V}$, $V_{\text{DS}} = 25\text{V}$, $f = 1.0\text{MHz}$
C_{OSS}	Common source output capacitance	-	-	50		
C_{RSS}	Reverse transfer capacitance	-	-	20		
t_r	Rise time	-	-	8.0		
$t_{\text{d(ON)}}$	Turn-on delay time	-	-	8.0	ns	$V_{\text{DD}} = 60\text{V}$, $I_D = 400\text{mA}$, $R_{\text{GEN}} = 25\Omega$
t_f	Fall time	-	-	12		
$t_{\text{d(OFF)}}$	Turn-off delay time	-	-	18		
V_{SD}	Diode forward voltage drop	-	1.2	-	V	$V_{\text{GS}} = 0\text{V}$, $I_{\text{SD}} = 250\text{mA}$

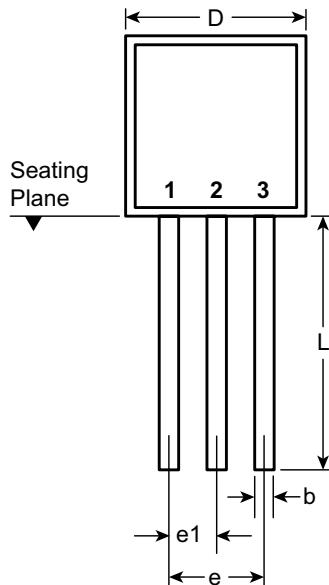
Notes:

- All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: $300\mu\text{s}$ pulse, 2% duty cycle.)
- All A.C. parameters sample tested.

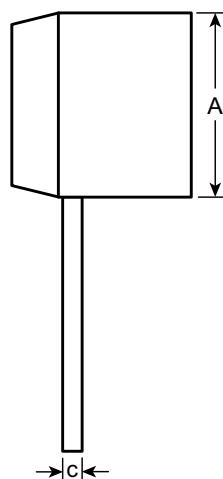
Switching Waveforms and Test Circuit



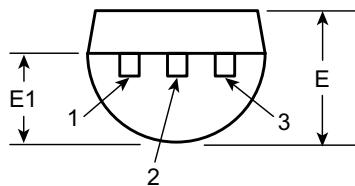
3-Lead TO-92 Package Outline (L)



Front View



Side View



Bottom View

Symbol		A	b	c	D	E	E1	e	e1	L
Dimensions (inches)	MIN	.170	.014 [†]	.014 [†]	.175	.125	.080	.095	.045	.500
	NOM	-	-	-	-	-	-	-	-	-
	MAX	.210	.022 [†]	.022 [†]	.205	.165	.105	.105	.055	.610*

JEDEC Registration TO-92.

* This dimension is not specified in the JEDEC drawing.

† This dimension differs from the JEDEC drawing.

Drawings not to scale.

Supertex Doc.#: DSPD-3TO92N3, Version E041009.

(The package drawing(s) in this data sheet may not reflect the most current specifications. For the latest package outline information go to <http://www.supertex.com/packaging.html>.)

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