N-Channel Enhancement-Mode Vertical DMOS FET

Features

- Low threshold - 2.0V max.
- High input impedance
- Low input capacitance - 50pF typical
- Fast switching speeds
- Low on-resistance
- Free from secondary breakdown
- Low input and output leakage

Applications

- Logic level interfaces – ideal for TTL and CMOS
- Solid state relays
- Battery operated systems
- Photo voltaic drives
- Analog switches
- General purpose line drivers
- Telecom switches

General Description

This low threshold, 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.

Ordering Information

Part Number	Package Option	Packing
TN0110N3-G	TO-92	1000/Bag
TN0110N3-G P002	TO-92	2000/Reel
TN0110N3-G P003		
TN0110N3-G P005		
TN0110N3-G P013		
TN0110N3-G P014		

-G denotes a lead (Pb)-free / RoHS compliant package.
Contact factory for Wafer / Die availablity.
Devices in Wafer / Die form are lead (Pb)-free / RoHS compliant.

Absolute Maximum Ratings

Parameter	Value
Drain-to-source voltage	BV_{DSS}
Drain-to-gate voltage	BV_{DGS}
Gate-to-source voltage	±20V
Operating and storage temperature	-55°C to +150°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied. Continuous operation of the device at the absolute rating level may affect device reliability. All voltages are referenced to device ground.

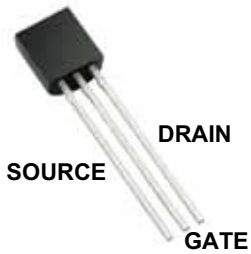
Typical Thermal Resistance

Package	θ_{ja}
TO-92	132°C/W

Product Summary

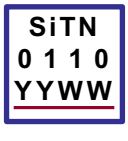
BV_{DSS}/BV_{DGS}	$R_{DS(ON)}$ (max)	$I_{D(ON)}$ (min)	$V_{GS(th)}$ (max)
100V	3.0Ω	2.0A	2.0V

Pin Configuration



TO-92

Product Marking



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

Package may or may not include the following marks: Si or

TO-92

Thermal Characteristics

Package	I_D (continuous)†	I_D (pulsed)	Power Dissipation @T_C = 25°C	I_{DR}†	I_{DRM}
TO-92	350mA	2.0A	1.0W	350mA	2.0A

Notes:

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

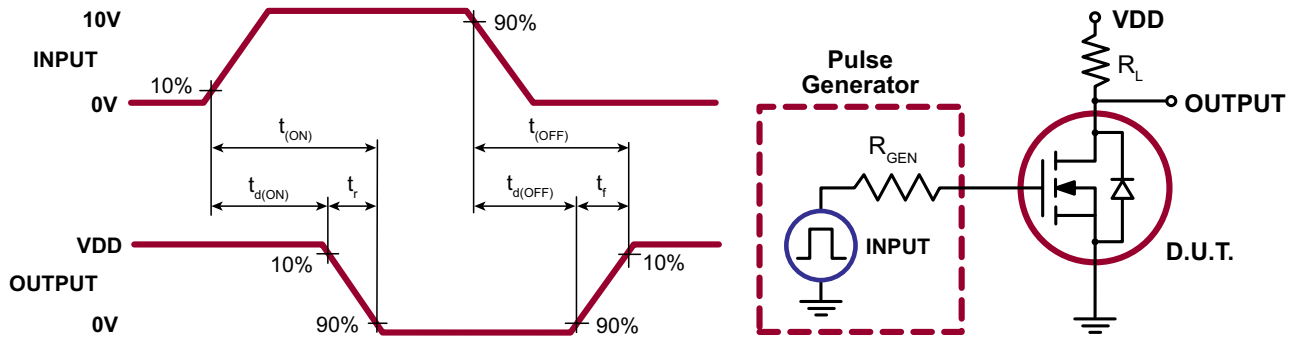
Electrical Characteristics *(T_A = 25°C unless otherwise specified)*

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	100	-	-	V	V_{GS} = 0V, I_D = 1.0mA
$V_{GS(th)}$	Gate threshold voltage	0.6	-	2.0	V	V_{GS} = V_{DS}, I_D= 0.5mA
$\Delta V_{GS(th)}$	Change in $V_{GS(th)}$ with temperature	-	-3.2	-5.0	mV/°C	V_{GS} = V_{DS}, I_D= 1.0mA
I_{GSS}	Gate body leakage	-	-	100	nA	V_{GS} = ± 20V, V_{DS} = 0V
I_{DSS}	Zero Gate voltage drain current	-	-	10	µA	V_{GS} = 0V, V_{DS} = Max Rating
		-	-	500	µA	V_{GS} = 0V, V_{DS} = 0.8 Max Rating, T_A = 125°C
$I_{D(ON)}$	ON-state drain current	0.75	1.4	-	A	V_{GS} = 5.0V, V_{DS} = 25V
		2.0	3.4	-		V_{GS} = 10V, V_{DS} = 25V
$R_{DS(ON)}$	Static drain-to-source on-state resistance	-	2.0	4.5	Ω	V_{GS} = 4.5V, I_D = 250mA
		-	1.6	3.0		V_{GS} = 10V, I_D = 500mA
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with temperature	-	0.6	1.1	%/°C	V_{GS} = 10V, I_D = 500mA
G_{FS}	Forward transductance	225	400	-	mmho	V_{DS} = 25V, I_D = 500mA
C_{ISS}	Input capacitance	-	50	60	pF	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz
C_{OSS}	Common source output capacitance	-	25	35		
C_{RSS}	Reverse transfer capacitance	-	4.0	8.0		
$t_{d(ON)}$	Turn-on delay time	-	2.0	5.0	ns	V_{DD} = 25V, I_D = 1.0A, R_{GEN} = 25Ω
t_r	Rise time	-	3.0	5.0		
$t_{d(OFF)}$	Turn-off delay time	-	6.0	7.0		
t_f	Fall time	-	3.0	6.0		
V_{SD}	Diode forward voltage drop		1.0	1.5	V	V_{GS} = 0V, I_{SD} = 500mA
t_{rr}	Reverse recovery time	-	400	-	ns	V_{GS} = 0V, I_{SD} = 500mA

Notes:

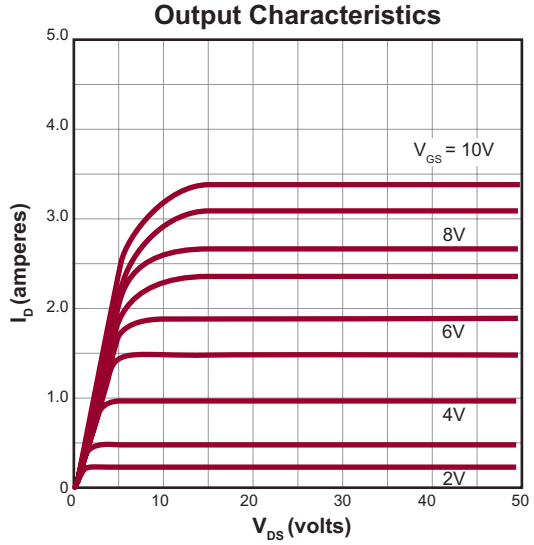
1. *All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: 300µs pulse, 2% duty cycle.)*
2. *All A.C. parameters sample tested.*

Switching Waveforms and Test Circuit

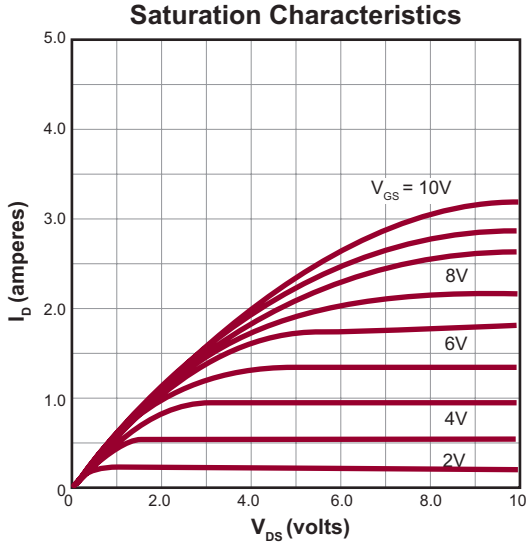


Typical Performance Curves

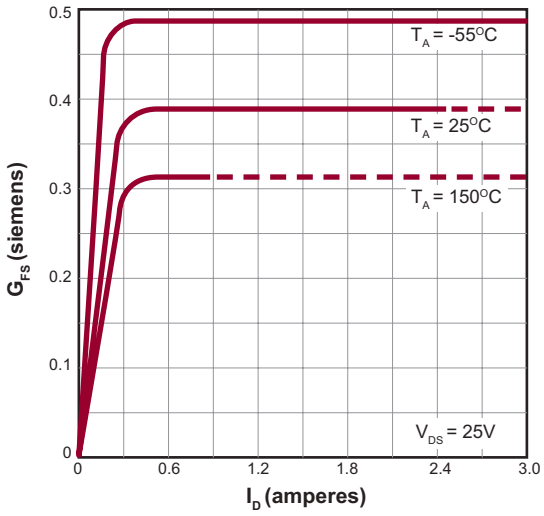
Output Characteristics



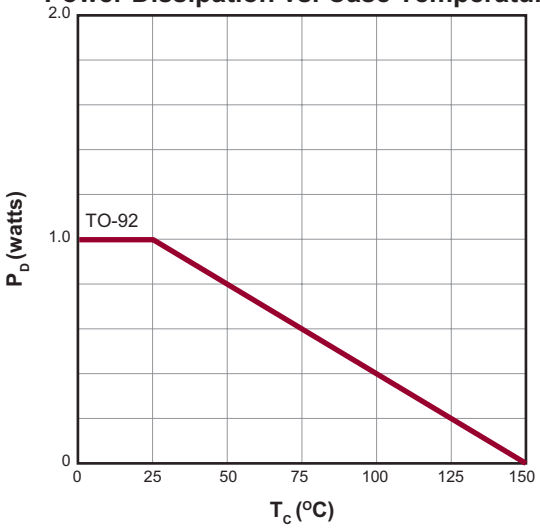
Saturation Characteristics



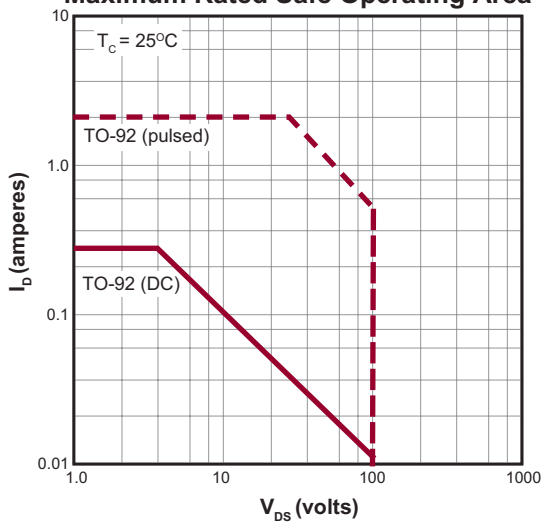
Transconductance vs. Drain Current



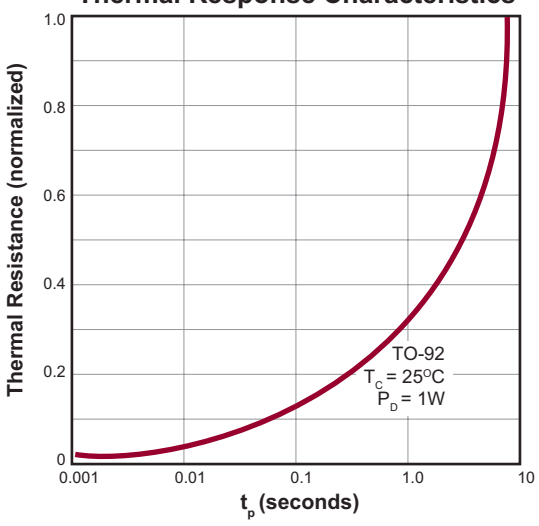
Power Dissipation vs. Case Temperature



Maximum Rated Safe Operating Area

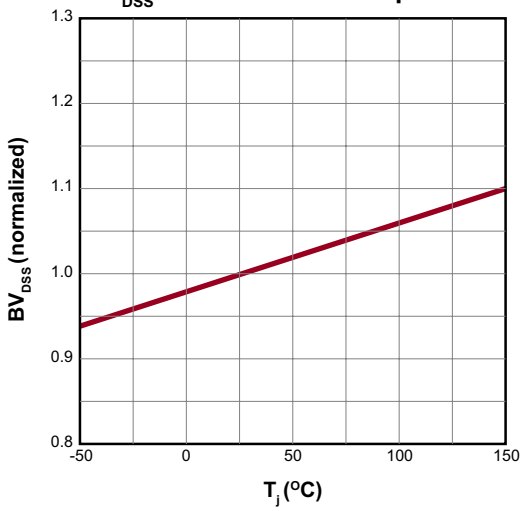


Thermal Response Characteristics

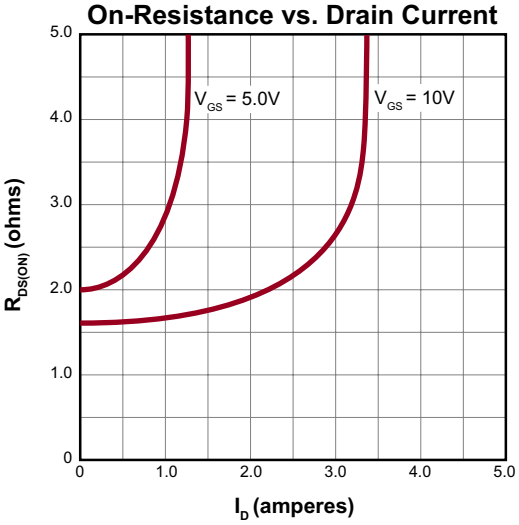


Typical Performance Curves *(cont.)*

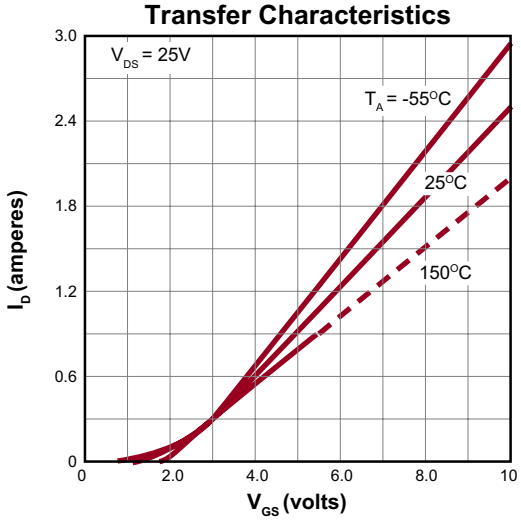
BV_{DSS} Variation with Temperature



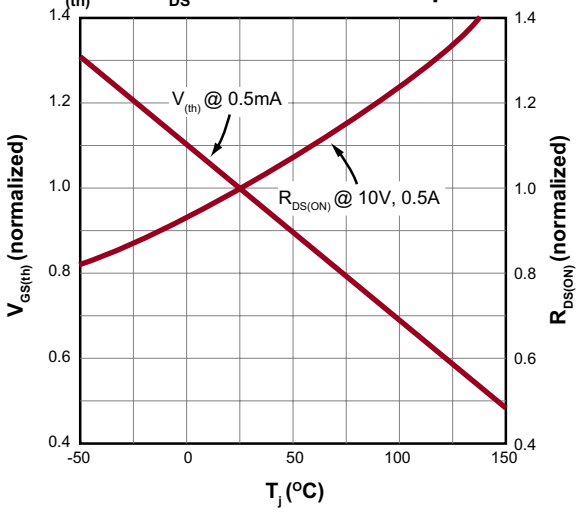
On-Resistance vs. Drain Current



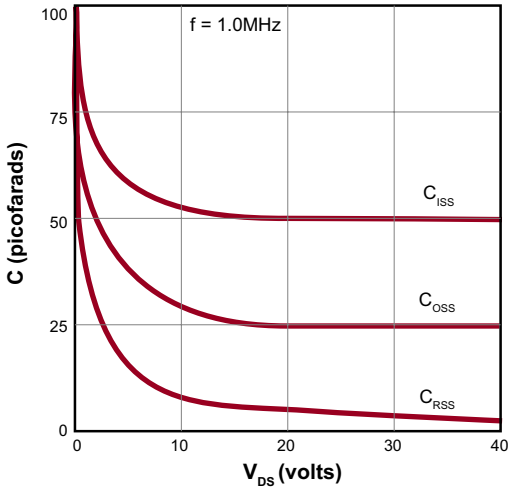
Transfer Characteristics



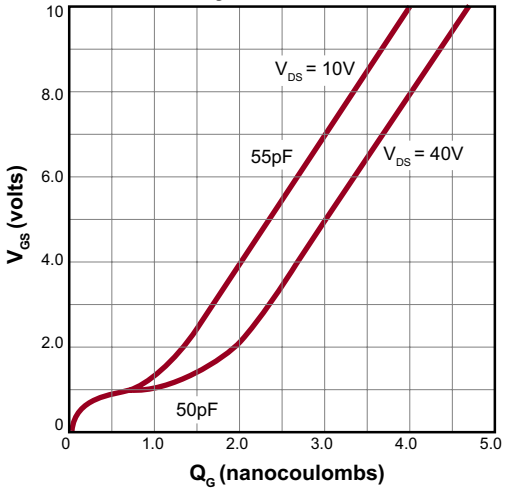
$V_{(th)}$ and R_{DS} Variation with Temperature



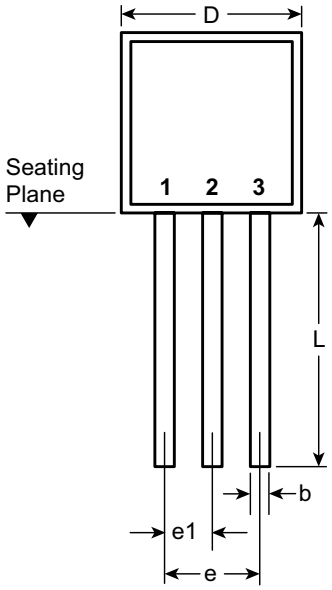
Capacitance vs. Drain-to-Source Voltage



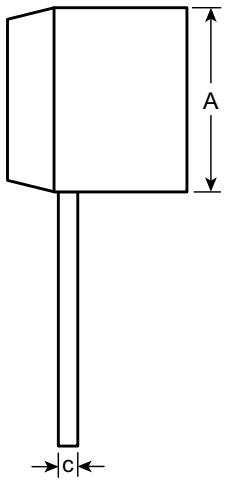
Gate Drive Dynamic Characteristics



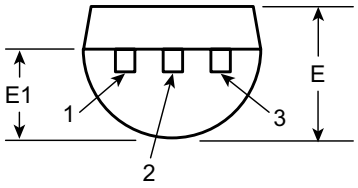
3-Lead TO-92 Package Outline (N3)



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.)

Supertex inc. does not recommend the use of its products in life support applications, and will not knowingly sell them for use in such applications unless it receives an adequate "product liability indemnification insurance agreement." **Supertex inc.** does not assume responsibility for use of devices described, and limits its liability to the replacement of the devices determined defective due to workmanship. No responsibility is assumed for possible omissions and inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications refer to the **Supertex inc.** (website: http//www.supertex.com)

©2013 **Supertex inc.** All rights reserved. Unauthorized use or reproduction is prohibited.

Supertex inc.
1235 Bordeaux Drive, Sunnyvale, CA 94089
Tel: 408-222-8888
www.supertex.com

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.