



P-Channel Enhancement-Mode Vertical DMOS FET

Features

- ▶ Low threshold (-2.0V max.)
- ▶ High input impedance
- ▶ Low input capacitance
- ▶ 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 with 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

Device	Package Option	BV_{DSS}/BV_{DGS} (max) (V)	$R_{DS(ON)}$ (max) (Ω)	$V_{GS(th)}$ (max) (V)	$I_{D(ON)}$ (min) (A)
	TO-92				
TP2635	TP2635N3-G	-350	15	-2.0	-0.7

-G indicates package is RoHS compliant ('Green')



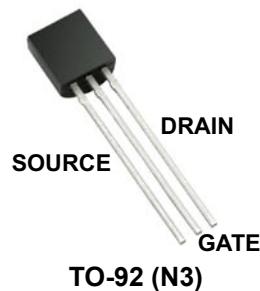
Absolute Maximum Ratings

Parameter	Value
Drain-to-source voltage	BV_{DSS}
Drain-to-gate voltage	BV_{DGS}
Gate-to-source voltage	$\pm 20V$
Operating and storage temperature	-55°C to +150°C
Soldering temperature*	+300°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.

* Distance of 1.6mm from case for 10 seconds.

Pin Configuration



TO-92 (N3)

Product Marking



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

Package may or may not include the following marks: Si or
TO-92 (N3)

Thermal Characteristics

Package	I_D (continuous) [†] (mA)	I_D (pulsed) (A)	Power Dissipation @ $T_c = 25^\circ\text{C}$ (W)	θ_{jc} (°C/W)	θ_{ja} (°C/W)	I_{DR}^t (mA)	I_{DRM} (A)
TO-92	-180	-0.8	1.0	125	170	-180	-0.8

Notes:

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

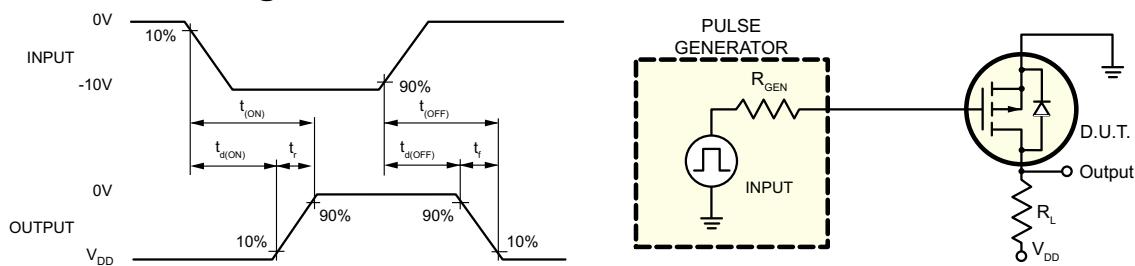
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	-350	-	-	V	$V_{GS} = 0\text{V}$, $I_D = -2.0\text{mA}$
$V_{GS(\text{th})}$	Gate threshold voltage	-0.8	-	-2.0	V	$V_{GS} = V_{DS}$, $I_D = -1.0\text{mA}$
$\Delta V_{GS(\text{th})}$	Change in $V_{GS(\text{th})}$ with temperature	-	-	5	mV/°C	$V_{GS} = V_{DS}$, $I_D = -1.0\text{mA}$
I_{GSS}	Gate body leakage	-		-100	nA	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$
I_{DSS}	Zero gate voltage drain current	-	-	-1.0	μA	$V_{GS} = 0\text{V}$, $V_{DS} = -100\text{V}$
				-10.0	μA	$V_{GS} = 0\text{V}$, $V_{DS} = \text{Max rating}$
				-1.0	mA	$V_{DS} = 0.8$ Max Rating, $V_{GS} = 0\text{V}$, $T_A = 125^\circ\text{C}$
$I_{D(\text{ON})}$	On-state drain current	-0.7	-	-	A	$V_{GS} = -10\text{V}$, $V_{DS} = -25\text{V}$
$R_{DS(\text{ON})}$	Static drain-to-source on-state resistance	-	12	15	Ω	$V_{GS} = -2.5\text{V}$, $I_D = -20\text{mA}$
			11	15	Ω	$V_{GS} = -4.5\text{V}$, $I_D = -150\text{mA}$
			11	15	Ω	$V_{GS} = -10\text{V}$, $I_D = -300\text{mA}$
$\Delta R_{DS(\text{ON})}$	Change in $R_{DS(\text{ON})}$ with temperature	-	-	0.75	%/°C	$V_{GS} = -10\text{V}$, $I_D = -300\text{mA}$
G_{FS}	Forward transconductance	200	-	-	mmho	$V_{DS} = -25\text{V}$, $I_D = -300\text{mA}$
C_{ISS}	Input capacitance	-	-	300	pF	$V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1.0\text{MHz}$
C_{OSS}	Common source output capacitance	-	-	50	pF	
C_{RSS}	Reverse transfer capacitance	-	-	12	pF	
$t_{d(\text{ON})}$	Turn-on delay time	-	-	10	ns	$V_{DD} = -25\text{V}$, $I_D = -300\text{mA}$, $R_{GEN} = 25\Omega$
t_r	Rise time	-	-	15	ns	
$t_{d(\text{OFF})}$	Turn-off delay time	-	-	60	ns	
t_f	Fall time	-	-	40	ns	
V_{SD}	Diode forward voltage drop	-	-	-1.8	V	$V_{GS} = 0\text{V}$, $I_{SD} = -200\text{mA}$
t_{rr}	Reverse recovery time	-	300	-	ns	$V_{GS} = 0\text{V}$, $I_{SD} = -200\text{mA}$

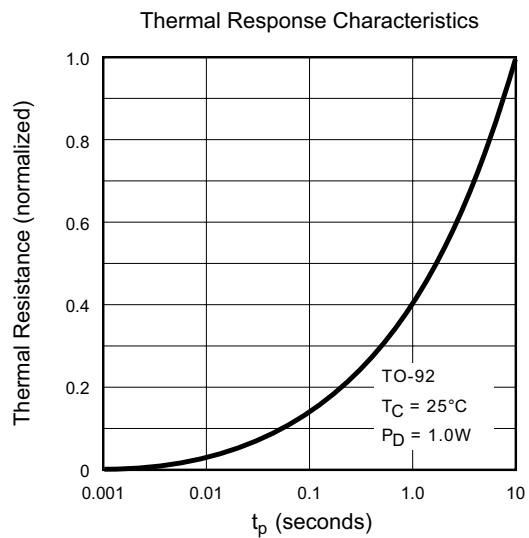
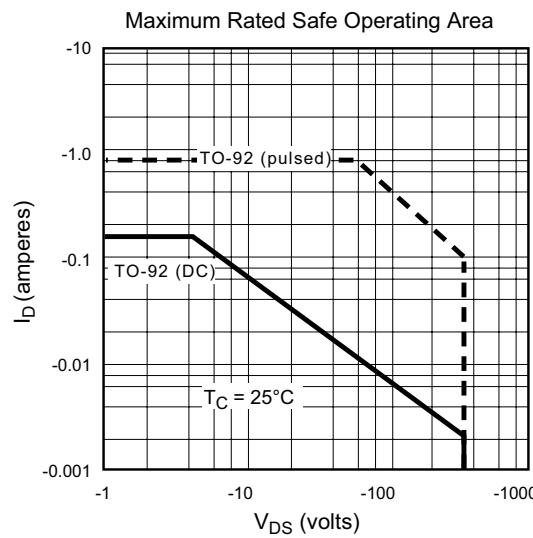
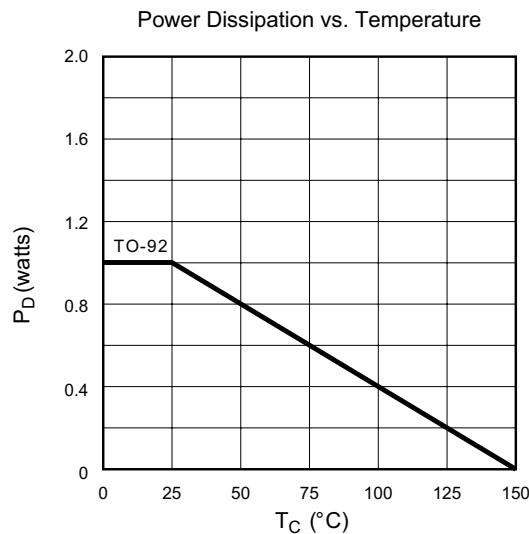
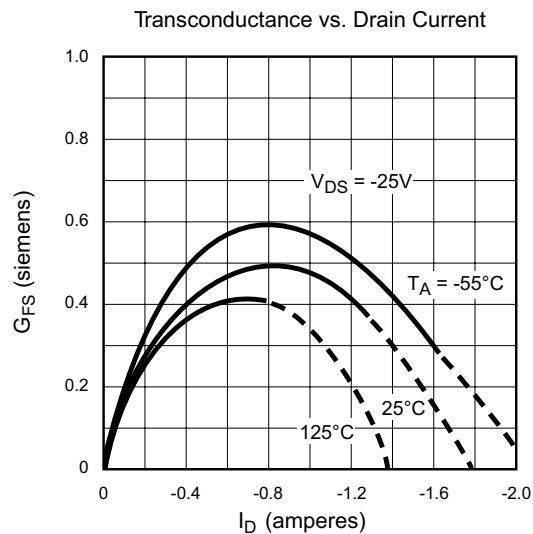
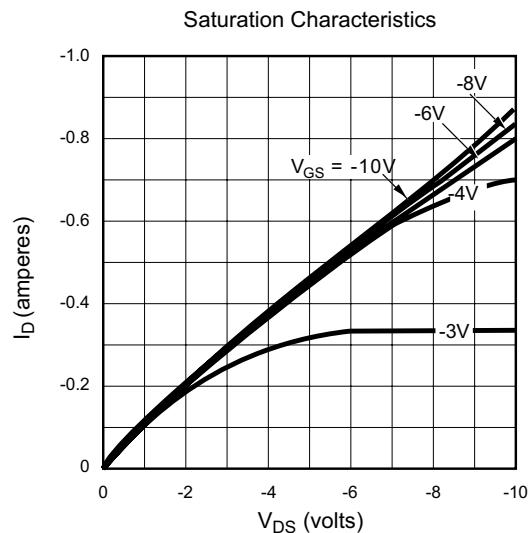
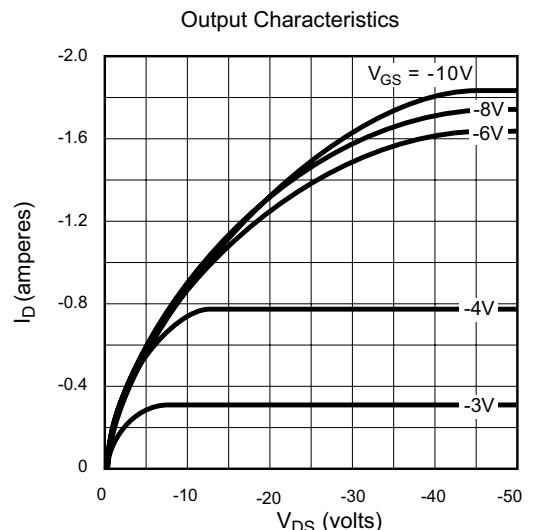
Notes:

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

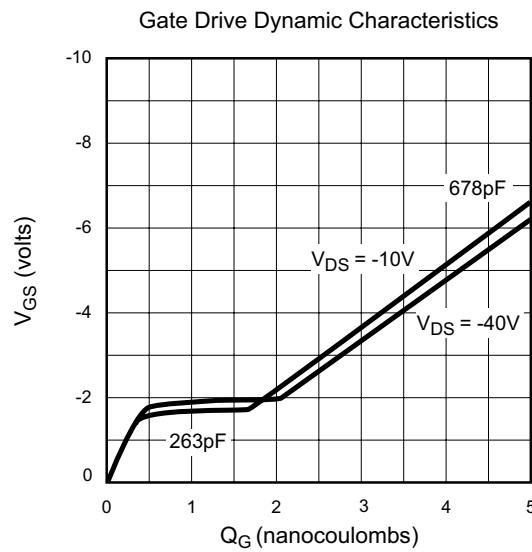
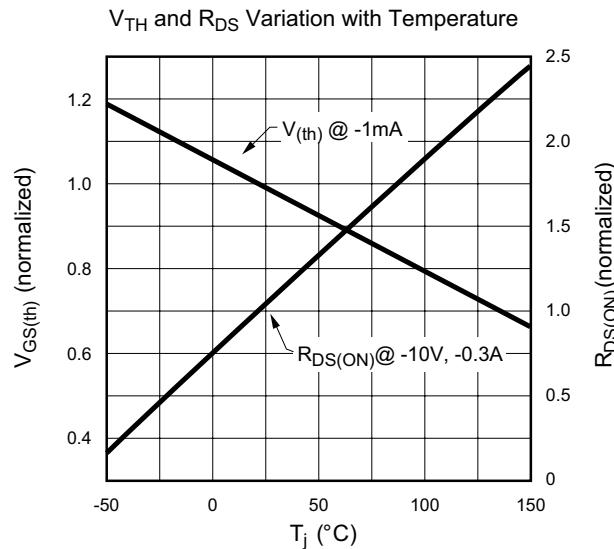
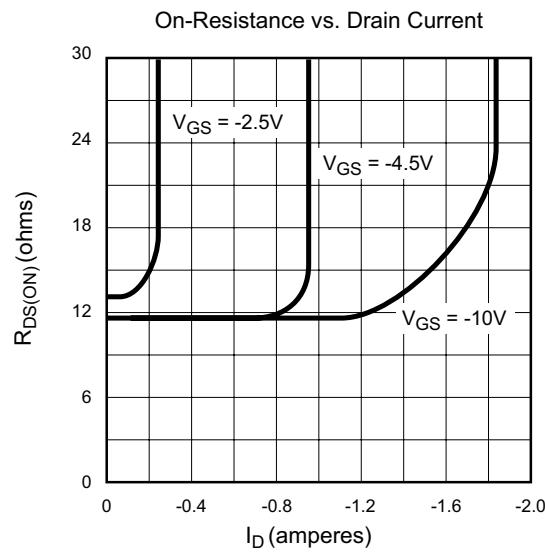
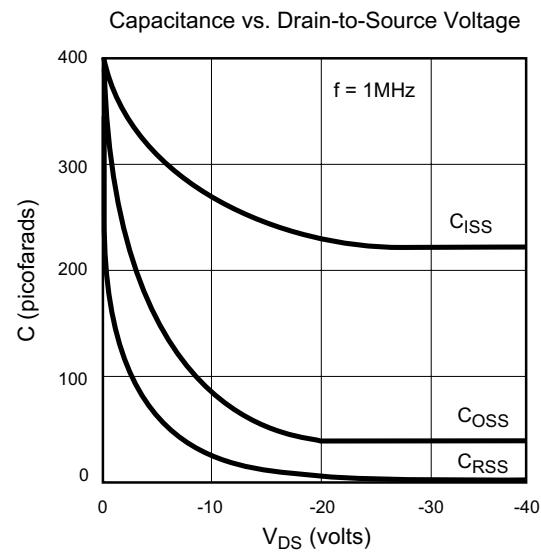
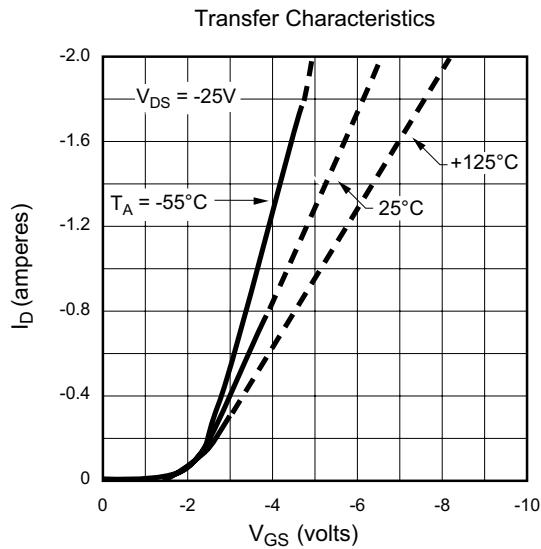
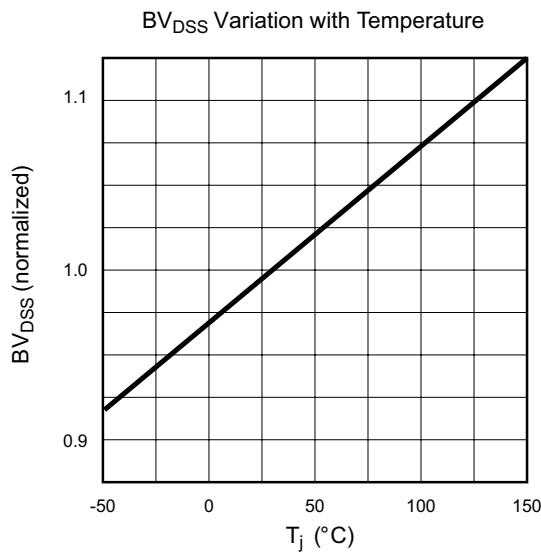
N- Channel Switching Waveforms and Test Circuit



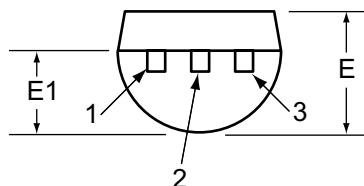
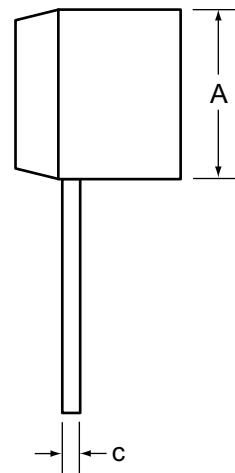
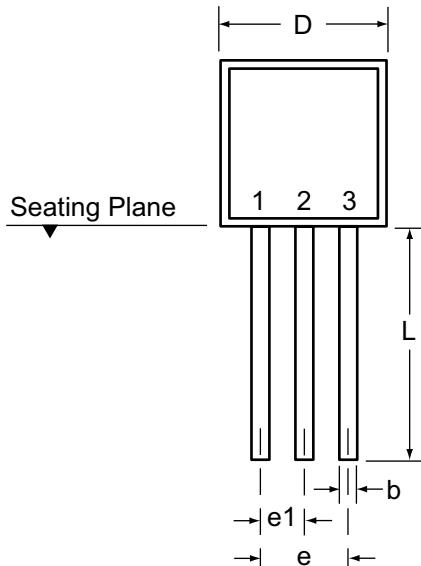
Typical Performance Curves



Typical Performance Curves (cont.)



3-Lead TO-92 Package Outline (N3)



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.#: DSPPD-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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ООО "ЛайфЭлектроникс"

"LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

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- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
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- Входной контроль качества.
- Наличие сертификата ISO.

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- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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