

Thermal Characteristics

Package	I_D (continuous) [†]	I_D (pulsed)	Power Dissipation @ $T_c = 25^\circ\text{C}$	I_{DR}^{\dagger}	I_{DRM}
TO-92	310mA	1.0A	1.0W	310mA	1.0A

Notes:

[†] I_D (continuous) is limited by max rated T_j . (VN0106N3 can be used if an I_D (continuous) of 500mA is needed.)

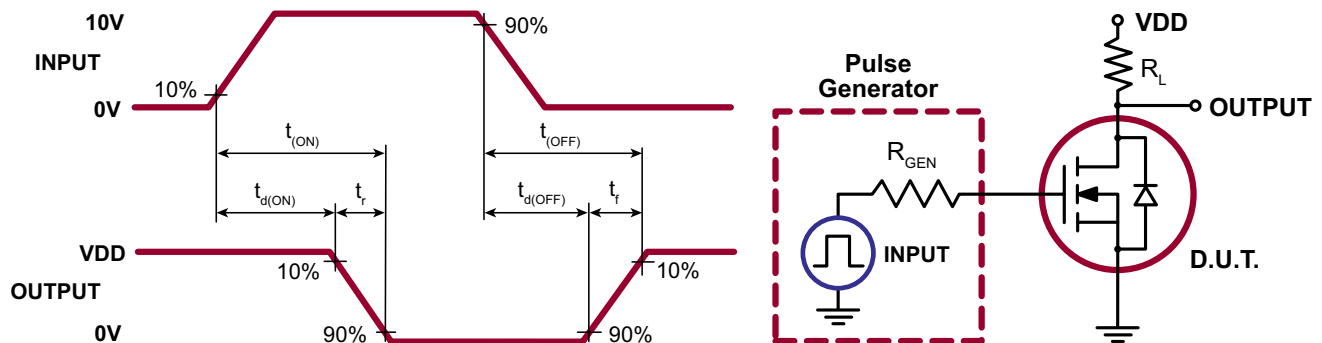
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	60	-	-	V	$V_{GS} = 0V, I_D = 100\mu A$
$V_{GS(th)}$	Gate threshold voltage	0.8	-	2.5	V	$V_{GS} = V_{DS}, I_D = 1.0mA$
$\Delta V_{GS(th)}$	Change in $V_{GS(th)}$ with temperature	-	-3.8	-	mV/ $^\circ\text{C}$	$V_{GS} = V_{DS}, I_D = 1.0mA$
I_{GSS}	Gate body leakage	-	-	100	nA	$V_{GS} = 15V, V_{DS} = 0V$
I_{DSS}	Zero gate voltage drain current	-	-	10	μA	$V_{GS} = 0V, V_{DS} = 45V$
		-	-	500		$V_{GS} = 0V, V_{DS} = 45V, T_A = 125^\circ\text{C}$
$I_{D(ON)}$	On-state drain current	0.75	-	-	A	$V_{GS} = 10V, V_{DS} = 10V$
$R_{DS(ON)}$	Static drain-to-source on-state resistance	-	-	7.5	Ω	$V_{GS} = 5.0V, I_D = 200mA$
		-	-	5.0		$V_{GS} = 10V, I_D = 500mA$
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with temperature	-	0.7	-	%/ $^\circ\text{C}$	$V_{GS} = 10V, I_D = 500mA$
G_{FS}	Forward transductance	100	-	-	mmho	$V_{DS} = 10V, I_D = 500mA$
C_{ISS}	Input capacitance	-	48	60	pF	$V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz$
C_{OSS}	Common source output capacitance	-	16	25		
C_{RSS}	Reverse transfer capacitance	-	2.0	5.0		
$t_{(ON)}$	Turn-on time	-	-	10	ns	$V_{DD} = 15V, I_D = 600mA, R_{GEN} = 25\Omega$
$t_{(OFF)}$	Turn-off time	-	-	10		
V_{SD}	Diode forward voltage drop	-	0.8	-	V	$V_{GS} = 0V, I_{SD} = 500mA$
t_{rr}	Reverse recovery time	-	160	-	ns	$V_{GS} = 0V, I_{SD} = 500mA$

Notes:

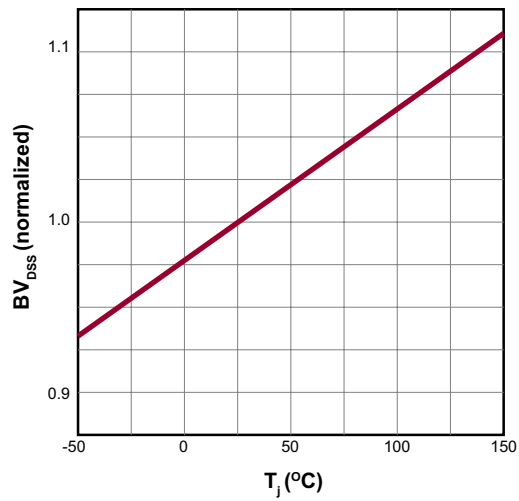
1. All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: 300 μs pulse, 2% duty cycle.)
2. All A.C. parameters sample tested.

Switching Waveforms and Test Circuit

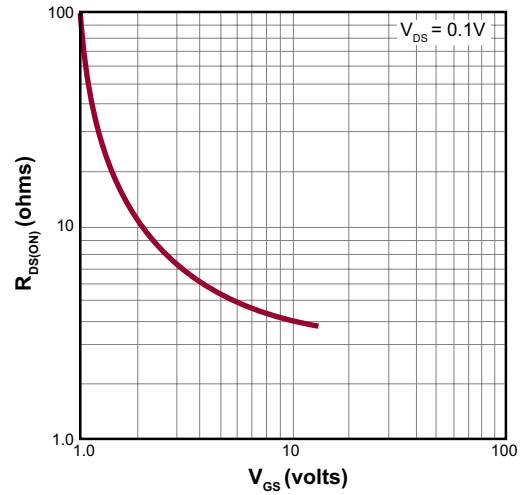


Typical Performance Curves

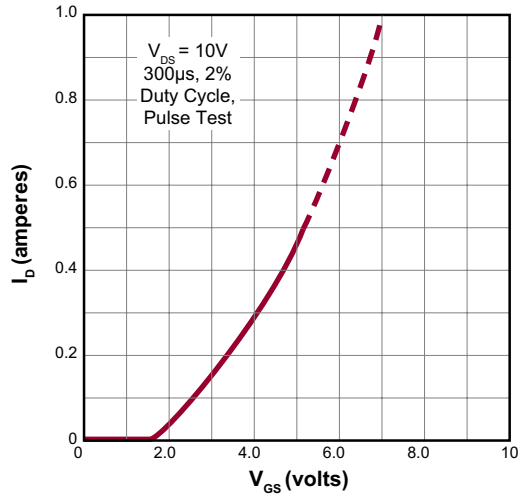
BV_{DSS} Variation with Temperature



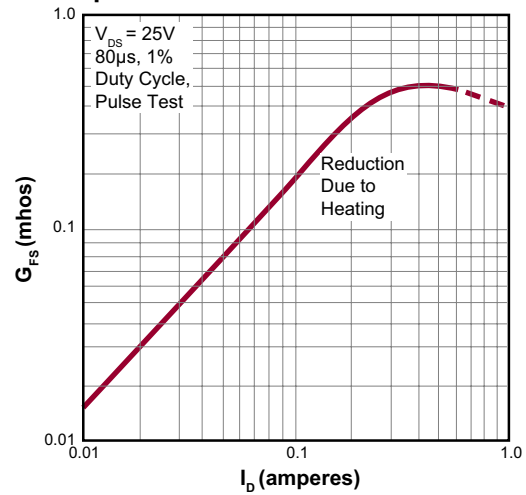
On-Resistance vs. Gate-to-Source Voltage



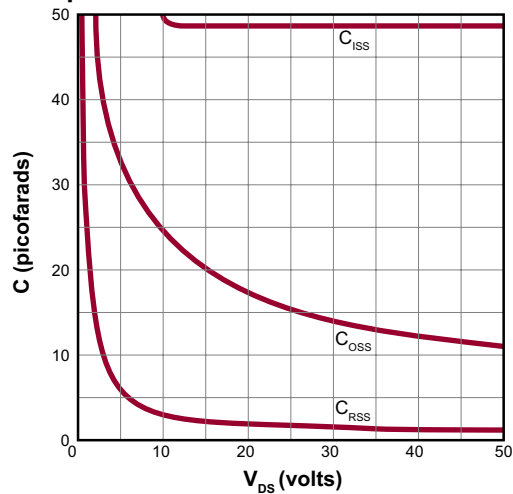
Transfer Characteristics



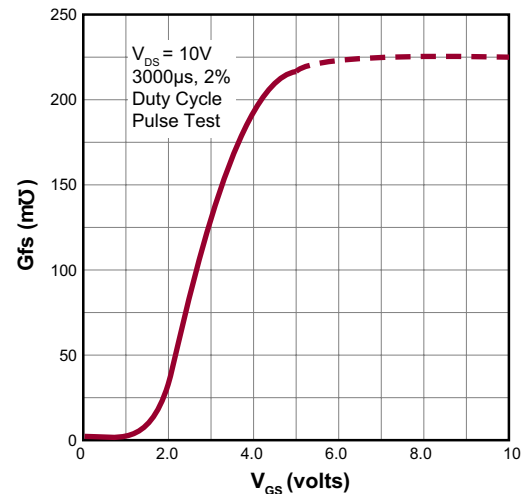
Output Conductance vs Drain Current



Capacitance vs. Drain-to-Source Voltage

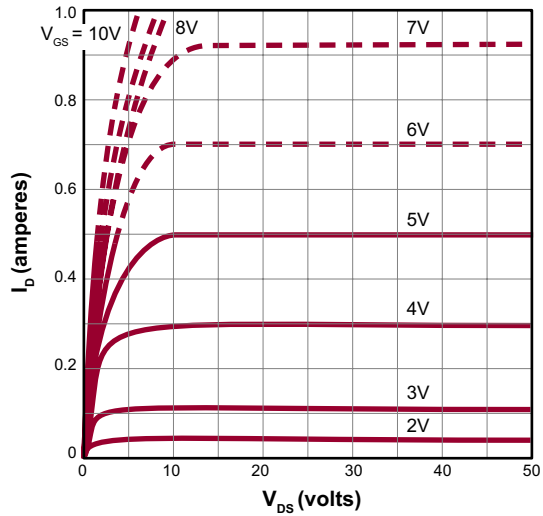


Transconductance vs Gate-Source Voltage

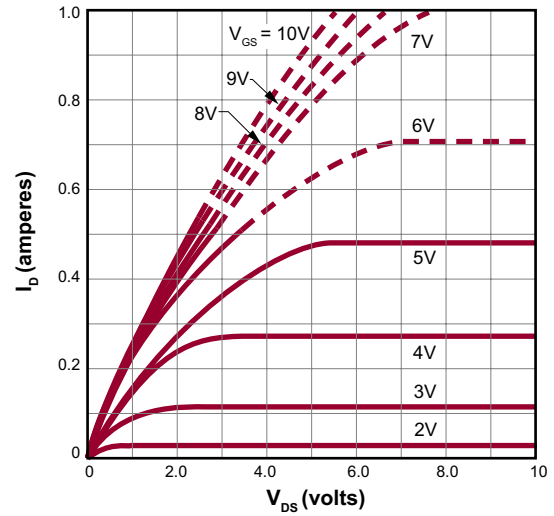


Typical Performance Curves (cont.)

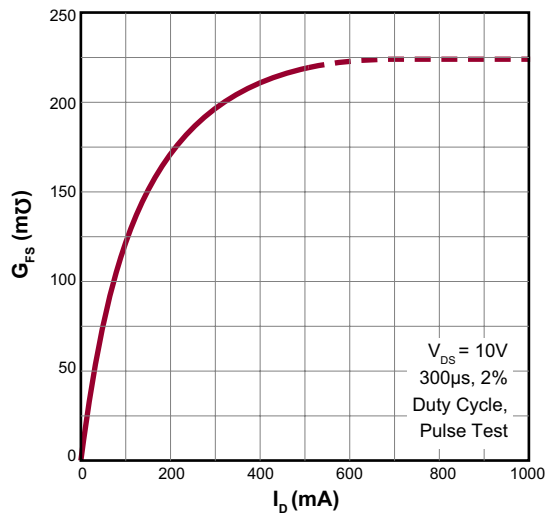
Output Characteristics



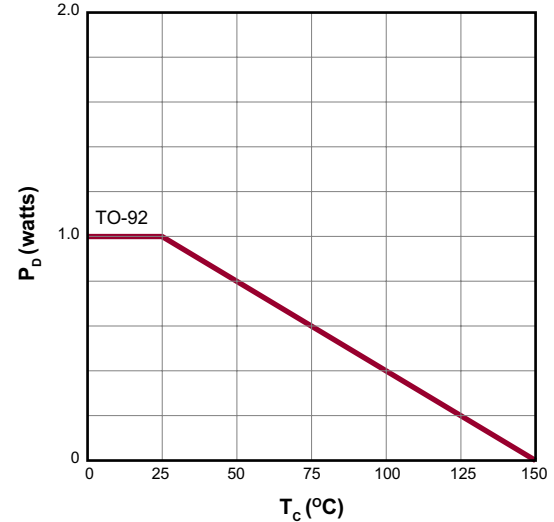
Saturation Characteristics



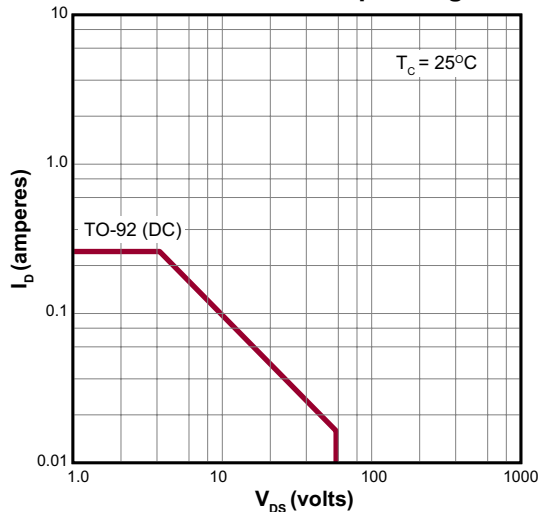
Transconductance vs. Drain Current



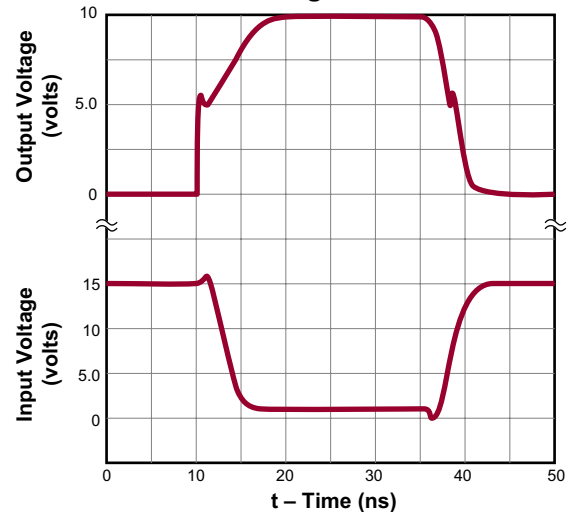
Power Dissipation vs. Case Temperature



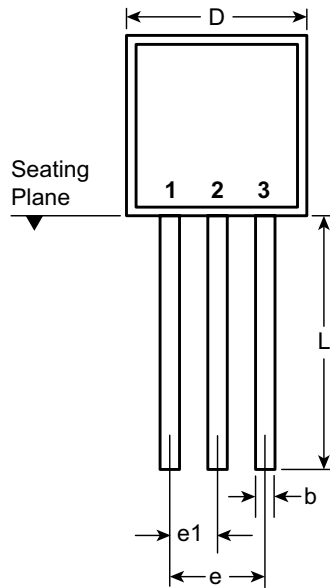
Maximum Rated Safe Operating Area



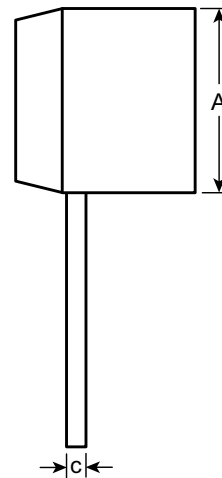
Switching Waveform



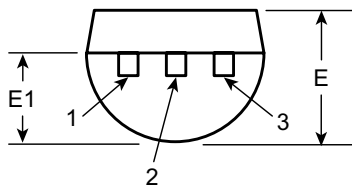
3-Lead TO-92 Package Outline (N3)



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>.)

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