Thermal Characteristics

Package	I_D (continuous)†	I_D (pulsed)	Power Dissipation @T_c = 25°C	I_{DR}†	I_{DRM}
TO-92	500mA	3.2A	1.0W	500mA	3.2A

Notes:

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

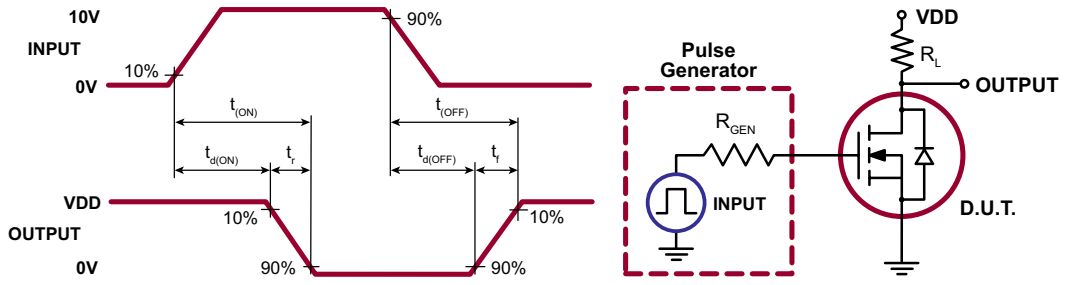
Electrical Characteristics *(T_A = 25°C unless otherwise specified)*

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= 1.0mA
$\Delta V_{GS(th)}$	Change in $V_{GS(th)}$ with temperature	-	-	-4.5	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
		-	-	1.0	mA	V_{DS} = 0.8 Max Rating, V_{GS} = 0V, T_A = 125°C
$I_{D(ON)}$	On-state drain current	1.2	2.0	-	A	V_{GS} = 5.0V, V_{DS} = 25V
		3.0	6.7	-		V_{GS} = 10V, V_{DS} = 25V
$R_{DS(ON)}$	Static drain-to-source on-state resistance	-	-	15	Ω	V_{GS} = 3.0V, I_D = 250mA
		-	1.5	2.0		V_{GS} = 5.0V, I_D = 750mA
		-	1.0	1.5		V_{GS} = 10V, I_D = 750mA
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with temperature	-	-	0.75	%/°C	V_{GS} = 10V, I_D = 750mA
G_{FS}	Forward transductance	400	500	-	mmho	V_{DS} = 25V, I_D = 1.0A
C_{ISS}	Input capacitance	-	100	150	pF	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz
C_{OSS}	Common source output capacitance	-	50	85		
C_{RSS}	Reverse transfer capacitance	-	10	35		
$t_{d(ON)}$	Turn-on delay time	-	-	6	ns	V_{DD} = 25V, I_D = 1.5A, R_{GEN} = 25Ω
t_r	Rise time	-	-	14		
$t_{d(OFF)}$	Turn-off delay time	-	-	16		
t_f	Fall time	-	-	16		
V_{SD}	Diode forward voltage drop	-	0.8	1.8	V	V_{GS} = 0V, I_{SD} = 1.5A
t_{rr}	Reverse recovery time	-	300	-	ns	V_{GS} = 0V, I_{SD} = 1.5A

Notes:

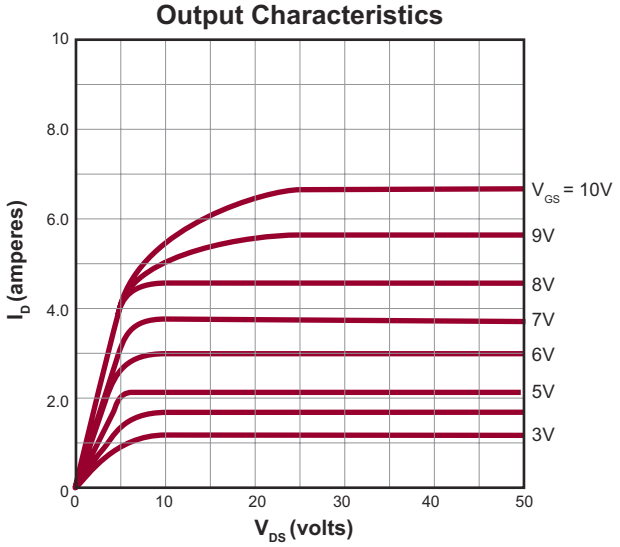
1. *All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: 300µs pulse, 2% duty cycle.)*
2. *All A.C. parameters sample tested.*

Switching Waveforms and Test Circuit

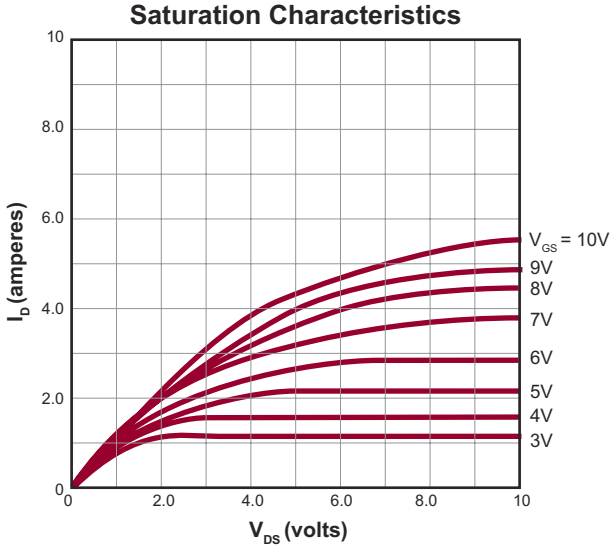


Typical Performance Curves

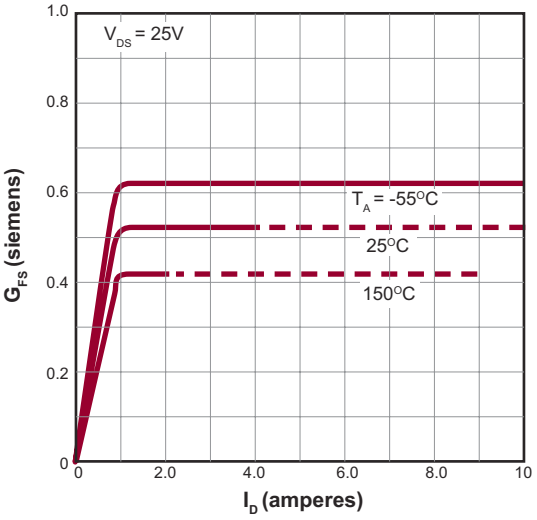
Output Characteristics



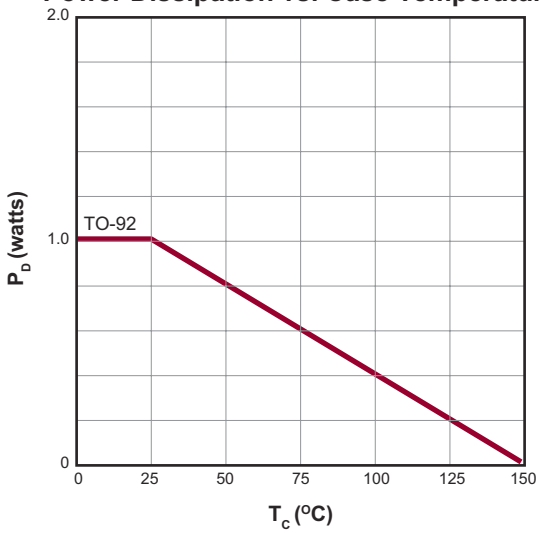
Saturation Characteristics



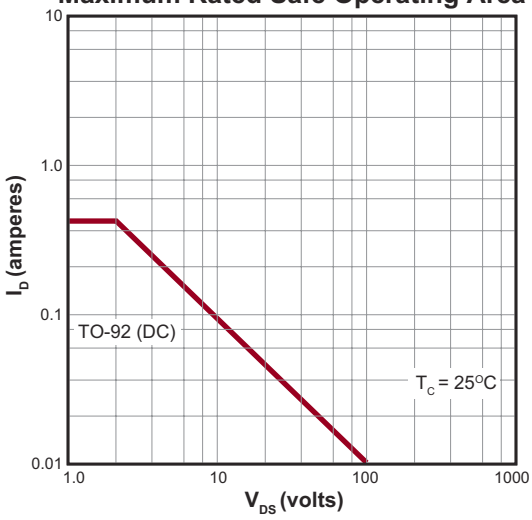
Transconductance vs. Drain Current



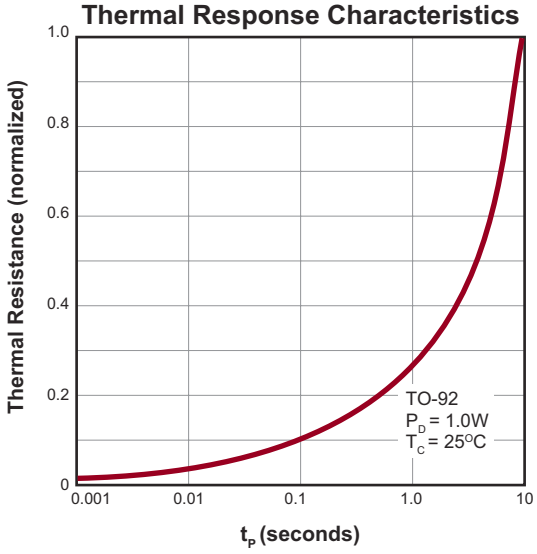
Power Dissipation vs. Case Temperature



Maximum Rated Safe Operating Area

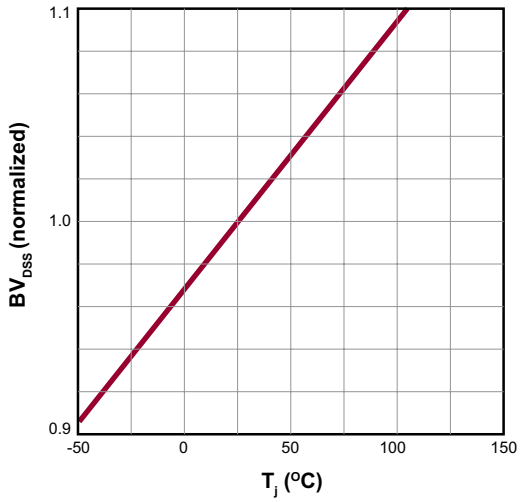


Thermal Response Characteristics

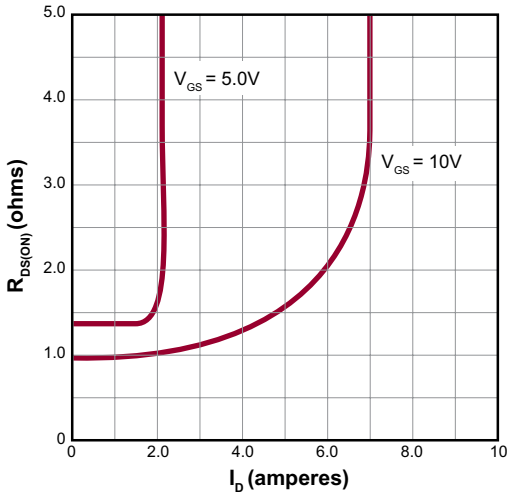


Typical Performance Curves *(cont.)*

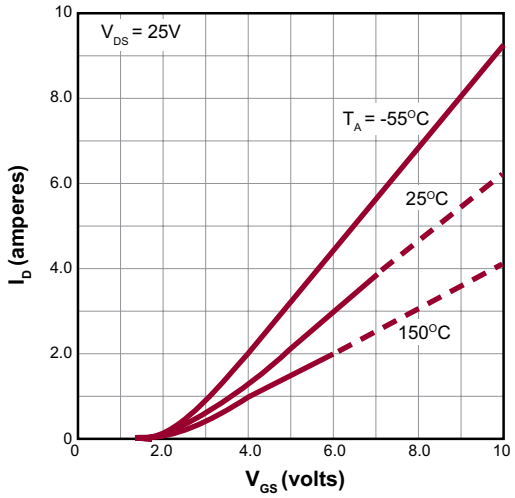
BV_{DSS} Variation with Temperature



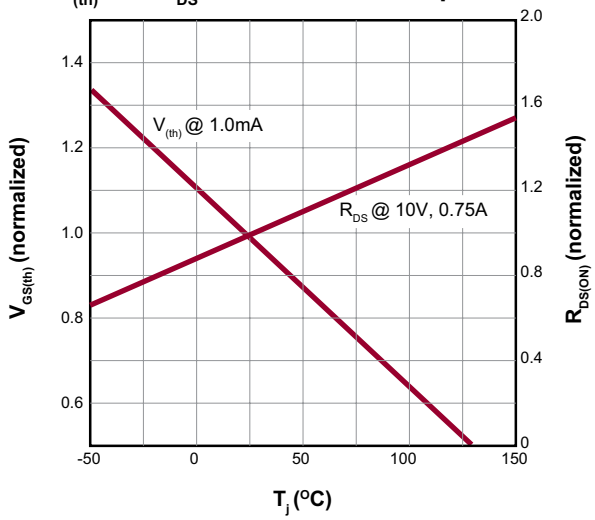
On-Resistance vs. Drain Current



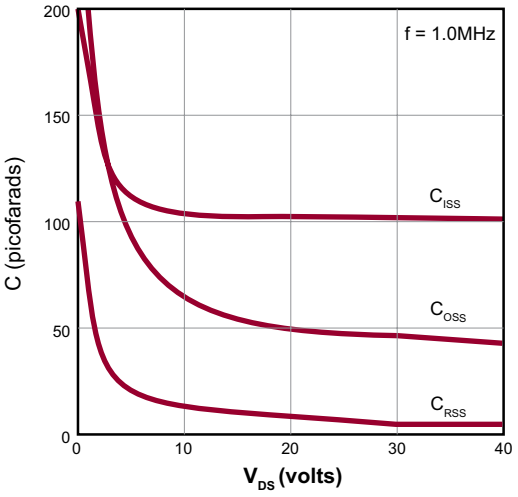
Transfer Characteristics



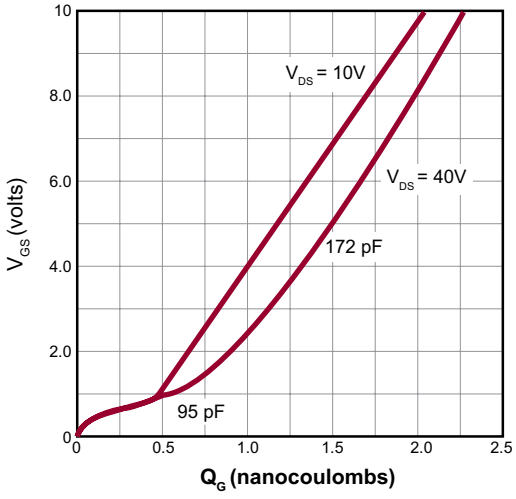
$V_{(th)}$ and R_{DS} Variation with Temperature



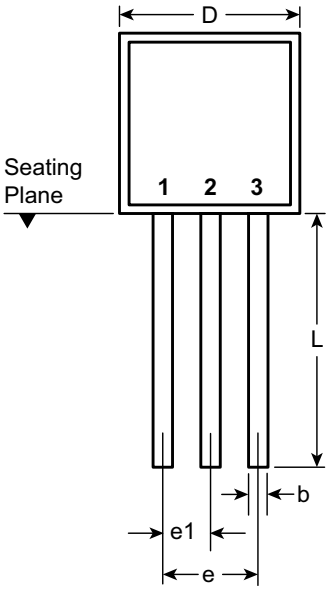
Capacitance vs. Drain-to-Source Voltage



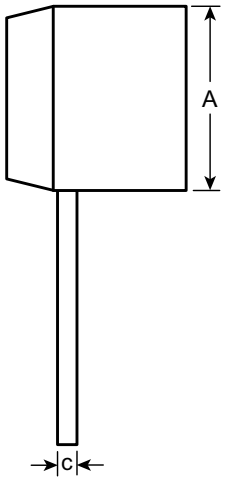
Gate Drive Dynamic Characteristics



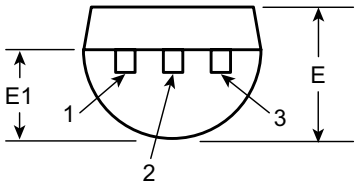
3-Lead TO-92 Package Outline (N3)



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.)

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