Thermal Characteristics

Package	I_D (continuous)†	I_D (pulsed)	Power Dissipation @T_C = 25°C	I_{DR}†	I_{DRM}
TO-92	-54mA	-250mA	1.0W	-54mA	-250mA

Notes:

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

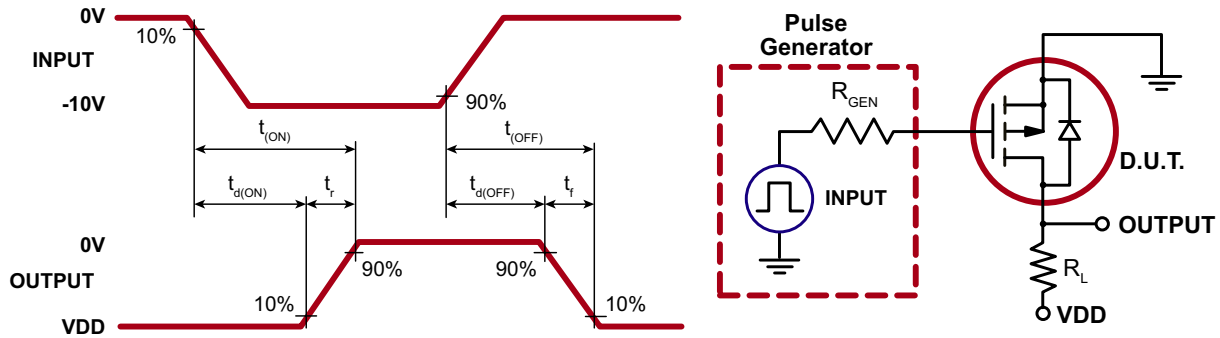
Electrical Characteristics *(T_A = 25°C unless otherwise specified)*

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	-500	-	-	V	V_{GS} = 0V, I_D = -1.0mA
$V_{GS(th)}$	Gate threshold voltage	-2.0	-	-4.5	V	V_{GS} = V_{DS}, I_D = -1.0mA
$\Delta V_{GS(th)}$	Change in $V_{GS(th)}$ with temperature	-	3.5	6.0	mV/°C	V_{GS} = V_{DS}, I_D = -1.0mA
I_{GSS}	Gate body leakage current	-	-	-100	nA	V_{GS} = ±20V, V_{DS} = 0V
I_{DSS}	Zero gate voltage drain current	-	-	-10	µA	V_{GS} = 0V, V_{DS} = Max Rating
		-	-	-1000		V_{DS} = 0.8 Max Rating, V_{GS} = 0V, T_A = 125°C
$I_{D(ON)}$	On-state drain current	-	-90	-	mA	V_{GS} = -5.0V, V_{DS} = -25V
		-100	-240	-		V_{GS} = -10V, V_{DS} = -25V
$R_{DS(ON)}$	Static drain-to-source on-state resistance	-	85	-	Ω	V_{GS} = -5.0V, I_D = -5mA
		-	80	125		V_{GS} = -10V, I_D = -10mA
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with temperature	-	0.85	-	%/°C	V_{GS} = -10V, I_D = -10mA
G_{FS}	Forward transconductance	25	40	-	mmho	V_{DS} = -25V, I_D = -10mA
C_{ISS}	Input capacitance	-	40	70	pF	V_{GS} = 0V, V_{DS} = -25V, f = 1.0MHz
C_{OSS}	Common source output capacitance	-	10	20		
C_{RSS}	Reverse transfer capacitance	-	3.0	10		
$t_{d(ON)}$	Turn-on delay time	-	5.0	10	ns	V_{DD} = -25V, I_D = -100mA, R_{GEN} = 25Ω
t_r	Rise time	-	8.0	10		
$t_{d(OFF)}$	Turn-off delay time	-	8.0	15		
t_f	Fall time	-	5.0	16		
V_{SD}	Diode forward voltage drop	-	-0.8	-1.5	V	V_{GS} = 0V, I_{SD} = -0.1A
t_{rr}	Reverse recovery time	-	200	-	ns	V_{GS} = 0V, I_{SD} = -0.1A

Notes:

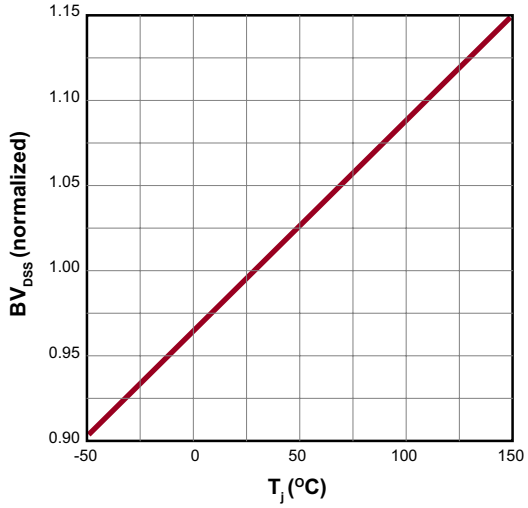
1. *All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: 300µs pulse, 2% duty cycle.)*
2. *All A.C. parameters sample tested.*

Switching Waveforms and Test Circuit

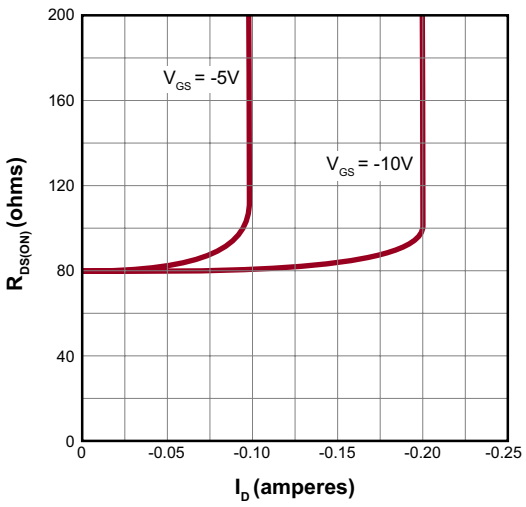


Typical Performance Curves

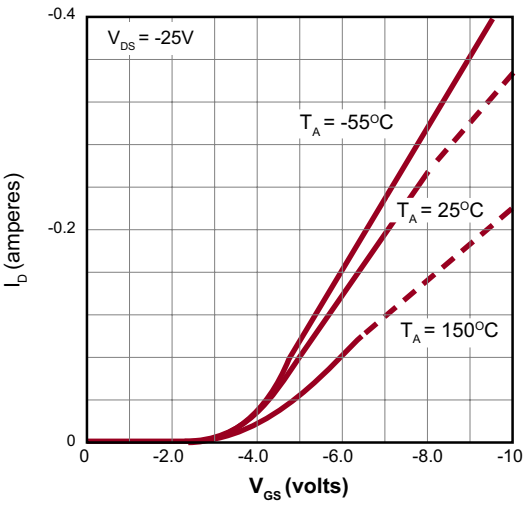
BV_{DSS} Variation with Temperature



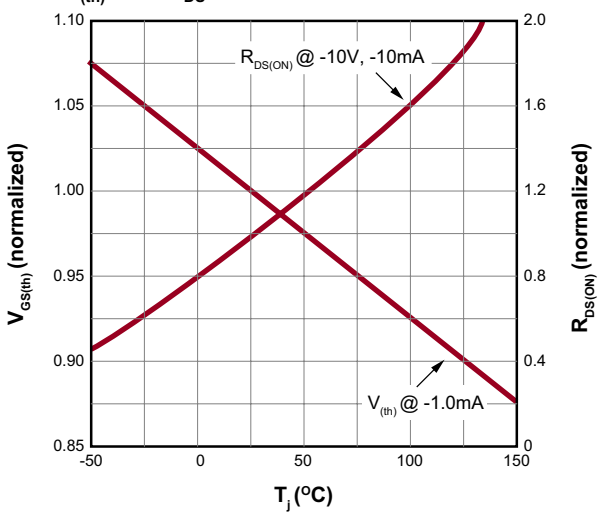
On-Resistance vs. Drain Current



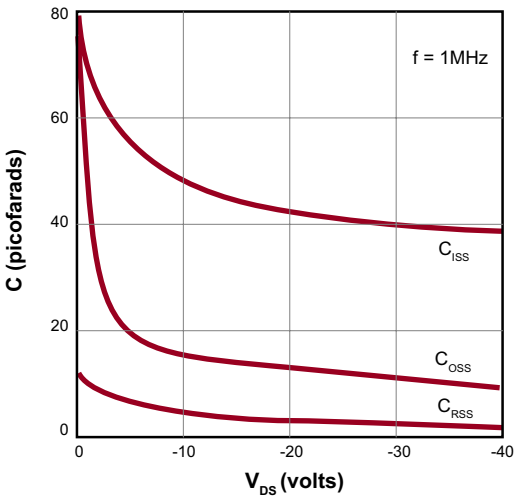
Transfer Characteristics



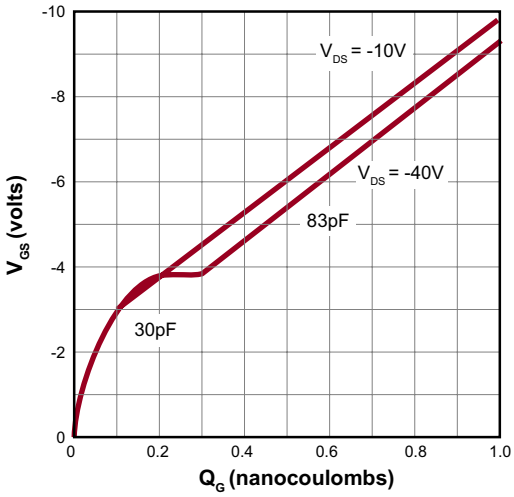
$V_{(th)}$ and R_{DS} Variation with Temperature



Capacitance vs. Drain-to-Source Voltage

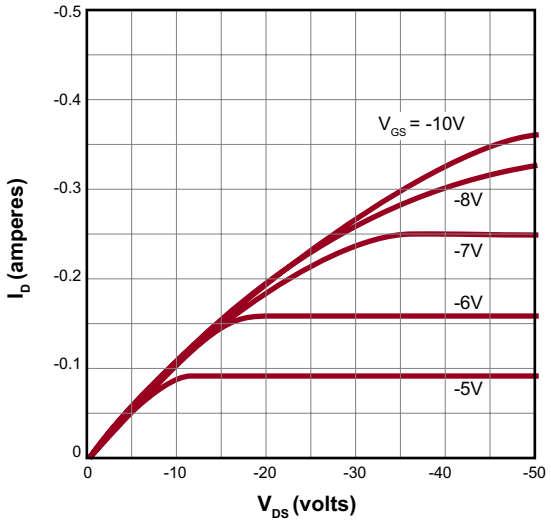


Gate Drive Dynamic Characteristics

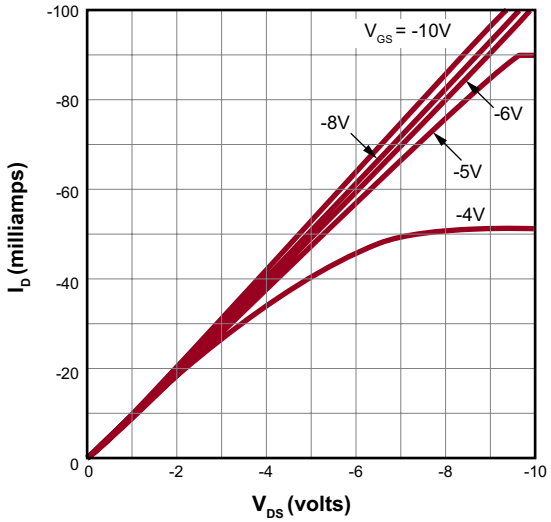


Typical Performance Curves *(cont.)*

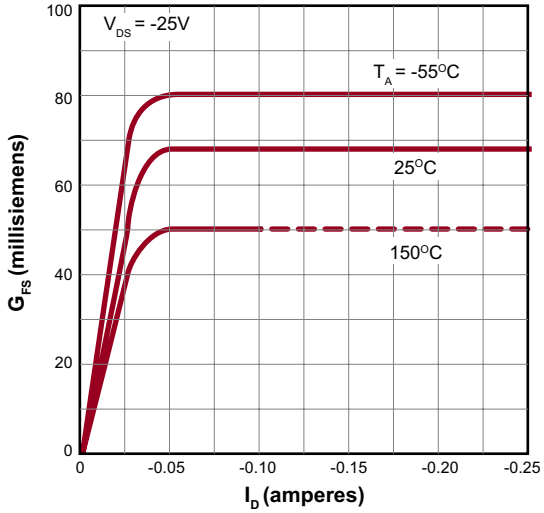
Output Characteristics



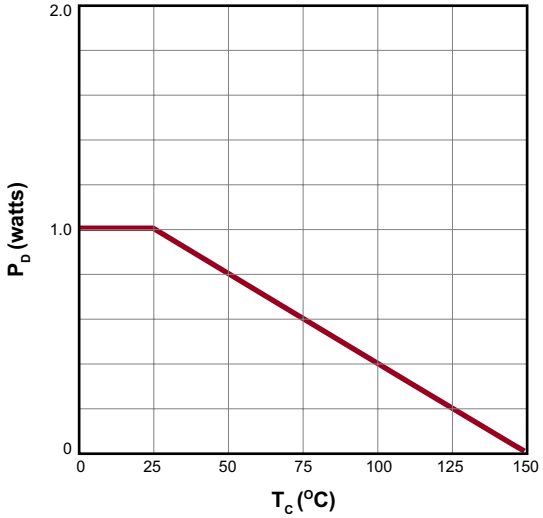
Saturation Characteristics



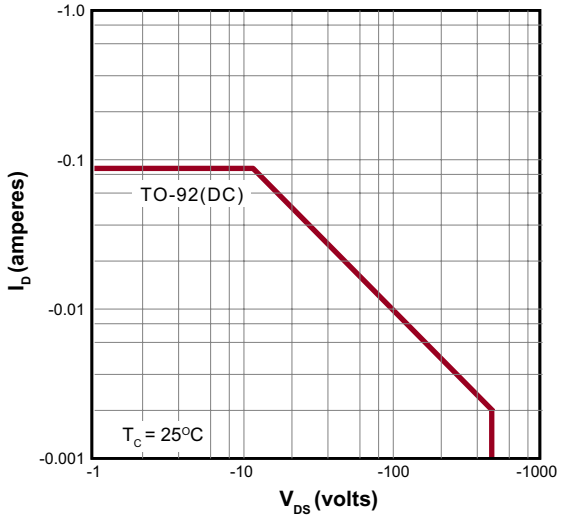
Transconductance vs. Drain Current



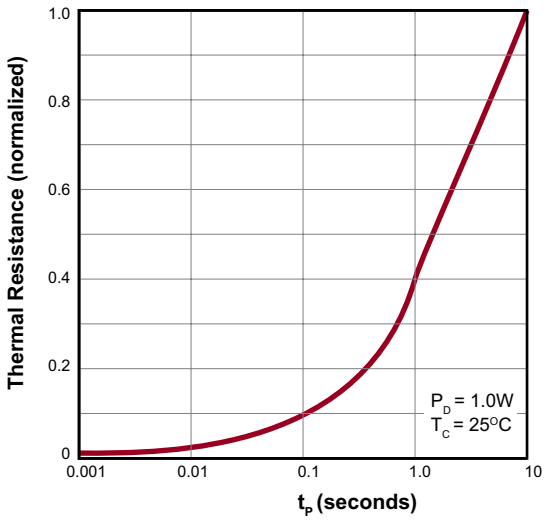
Power Dissipation vs. Case Temperature



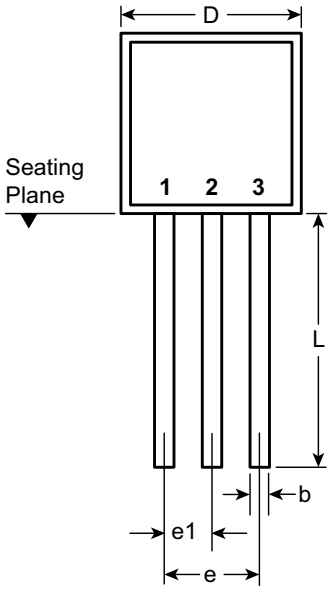
Maximum Rated Safe Operating Area



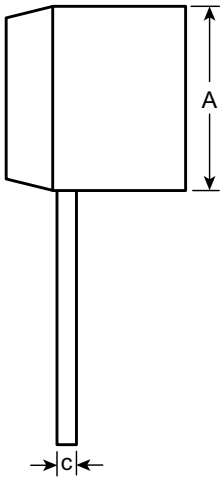
Thermal Response Characteristics



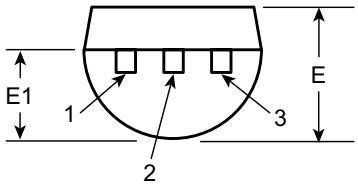
3-Lead TO-92 Package Outline (N3)



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