

Thermal Characteristics

Package	I_D (continuous) [†]	I_D (pulsed)	Power Dissipation @ $T_A = 25^\circ\text{C}$	I_{DR} [‡]	I_{DRM}
TO-92	-650mA	-4.0A	0.74W	-650mA	-4.0A
TO-243AA (SOT-89)	-1100mA	-4.0A	1.6 [‡]	-1100mA	-4.0A

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

[‡] Mounted on FR5 board, 25mm x 25mm x 1.57mm.

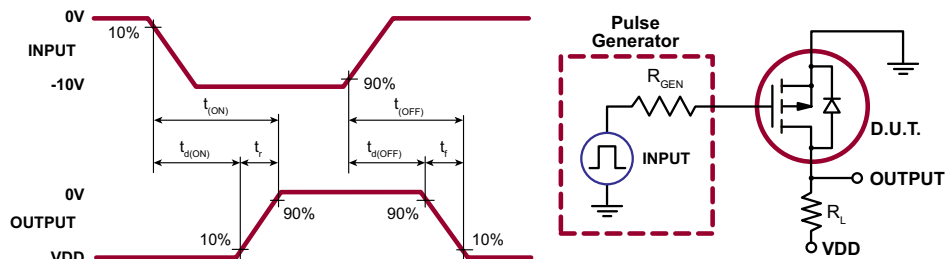
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	-30	-	-	V	$V_{GS} = 0V, I_D = -10mA$
$V_{GS(th)}$	Gate threshold voltage	-1.0	-	-3.5	V	$V_{GS} = V_{DS}, I_D = -10mA$
$\Delta V_{GS(th)}$	Change in $V_{GS(th)}$ with temperature	-	-	-5.5	mV/ $^\circ\text{C}$	$V_{GS} = V_{DS}, I_D = -10mA$
I_{GSS}	Gate body leakage	-	-1.0	-100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
I_{DSS}	Zero gate voltage drain current	-	-	-10	μA	$V_{GS} = 0V, V_{DS} = \text{Max Rating}$
		-	-	-1.0	mA	$V_{DS} = 0.8 \text{ Max Rating}, V_{GS} = 0V, T_A = 125^\circ\text{C}$
$I_{D(ON)}$	On-state drain current	-	-14	-	A	$V_{GS} = -10V, V_{DS} = -5.0V$
$R_{DS(ON)}$	Static drain-to-source on-state resistance	TO-92	-	-	1.0	$V_{GS} = -4.5V, I_D = -1.5A$
		SOT-89	-	-	1.0	$V_{GS} = -4.5V, I_D = -750mA$
		TO-92	-	-	0.6	$V_{GS} = -10V, I_D = -3.0A$
		SOT-89	-	-	0.6	$V_{GS} = -10V, I_D = -1.5A$
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with temperature	-	-	1.0	%/ $^\circ\text{C}$	$V_{GS} = -10V, I_D = -1.5A$
G_{FS}	Forward transductance	1000	2000	-	mmho	$V_{DS} = -25V, I_D = -2.0A$
C_{ISS}	Input capacitance	-	200	300	pF	$V_{GS} = 0V,$ $V_{DS} = -25V,$ $f = 1.0MHz$
C_{OSS}	Common source output capacitance	-	100	120		
C_{RSS}	Reverse transfer capacitance	-	45	60		
$t_{d(ON)}$	Turn-on delay time	-	-	10	ns	$V_{DD} = -25V,$ $I_D = -2.0A,$ $R_{GEN} = 10\Omega$
t_r	Rise time	-	-	15		
$t_{d(OFF)}$	Turn-off delay time	-	-	25		
t_f	Fall time	-	-	25		
V_{SD}	Diode forward voltage drop	-	-	-1.6	V	$V_{GS} = 0V, I_{SD} = -1.5A$
t_{rr}	Reverse recovery time	-	300	-	ns	$V_{GS} = 0V, I_{SD} = -1.0A$

Notes:

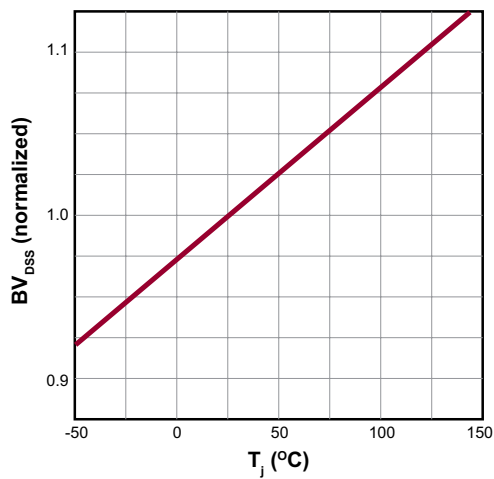
1. All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: 300 μs pulse, 2% duty cycle.)
2. All A.C. parameters sample tested.

Switching Waveforms and Test Circuit

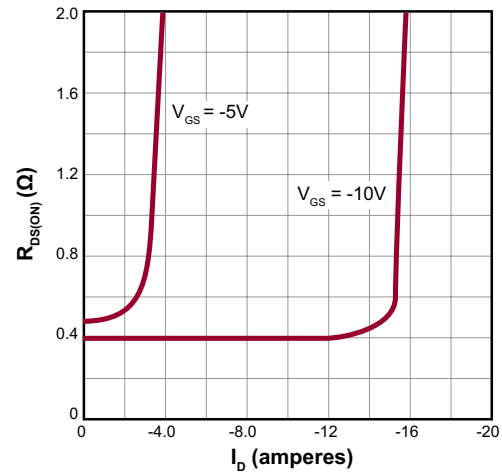


Typical Performance Curves

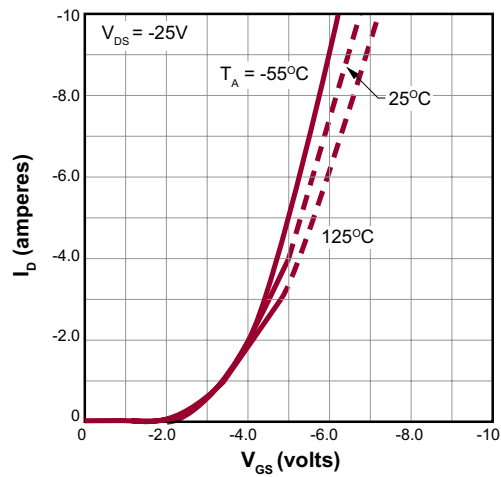
BV_{DS} Variation with Temperature



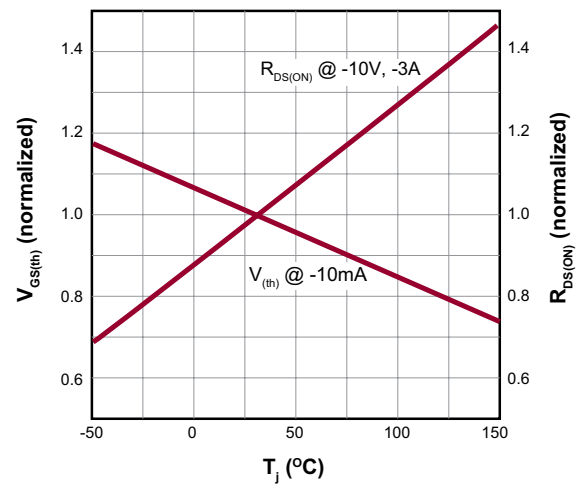
On-Resistance vs. Drain Current



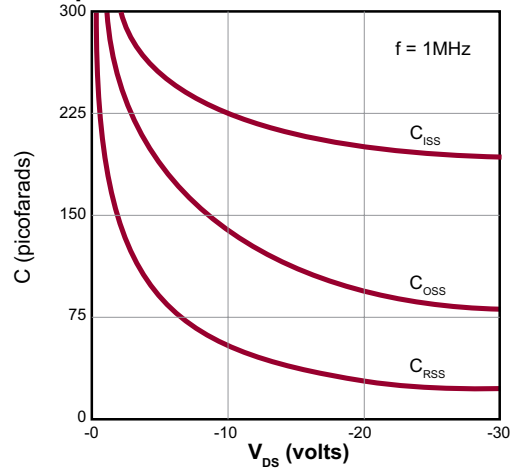
Transfer Characteristics



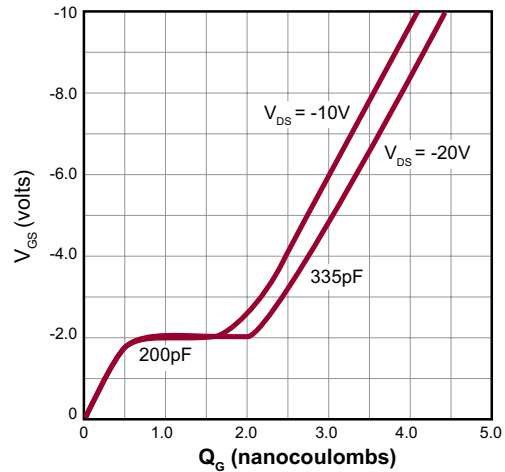
$V_{GS(th)}$ and R_{DS} Variation with Temperature



Capacitance vs. Drain-to-Source Voltage

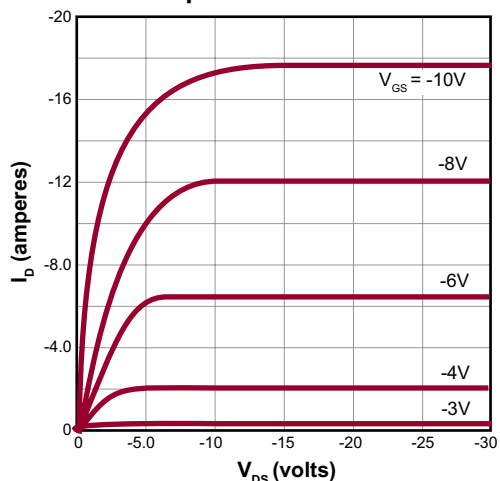


Gate Drive Dynamic Characteristics

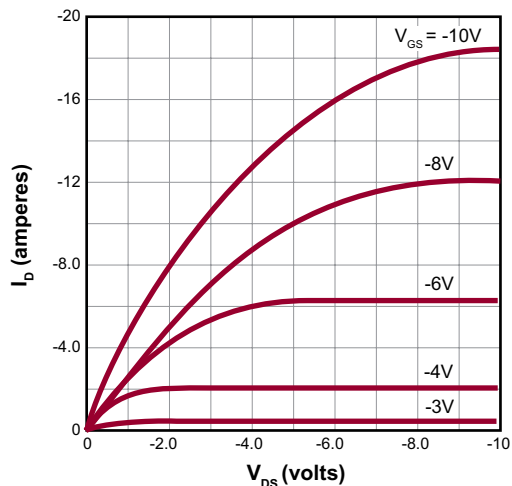


Typical Performance Curves (cont.)

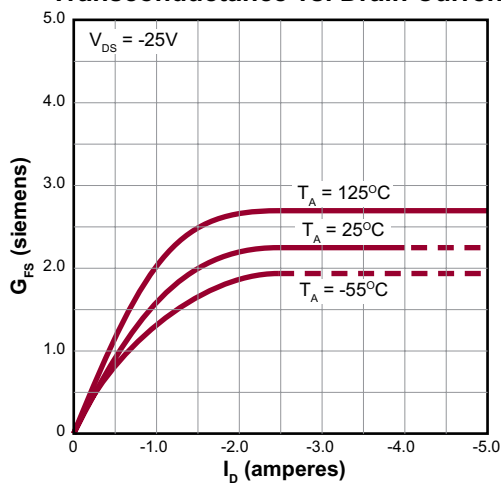
Output Characteristics



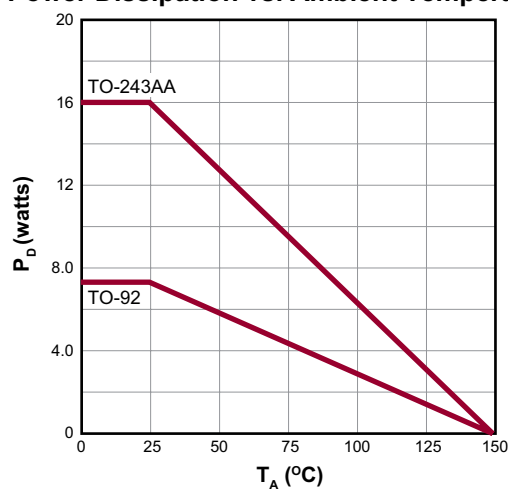
Saturation Characteristics



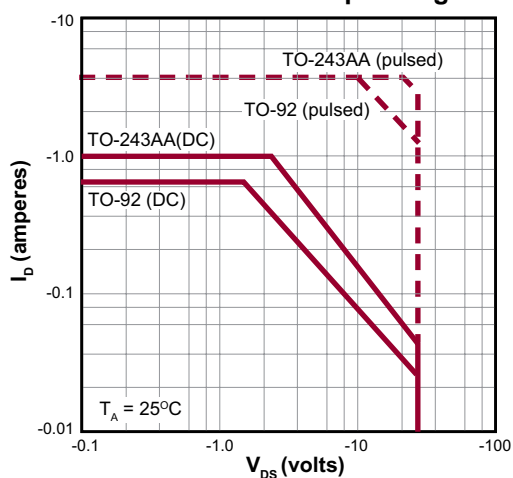
Transconductance vs. Drain Current



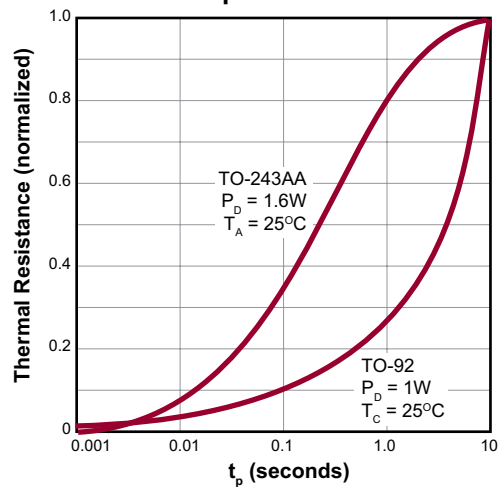
Power Dissipation vs. Ambient Temperature



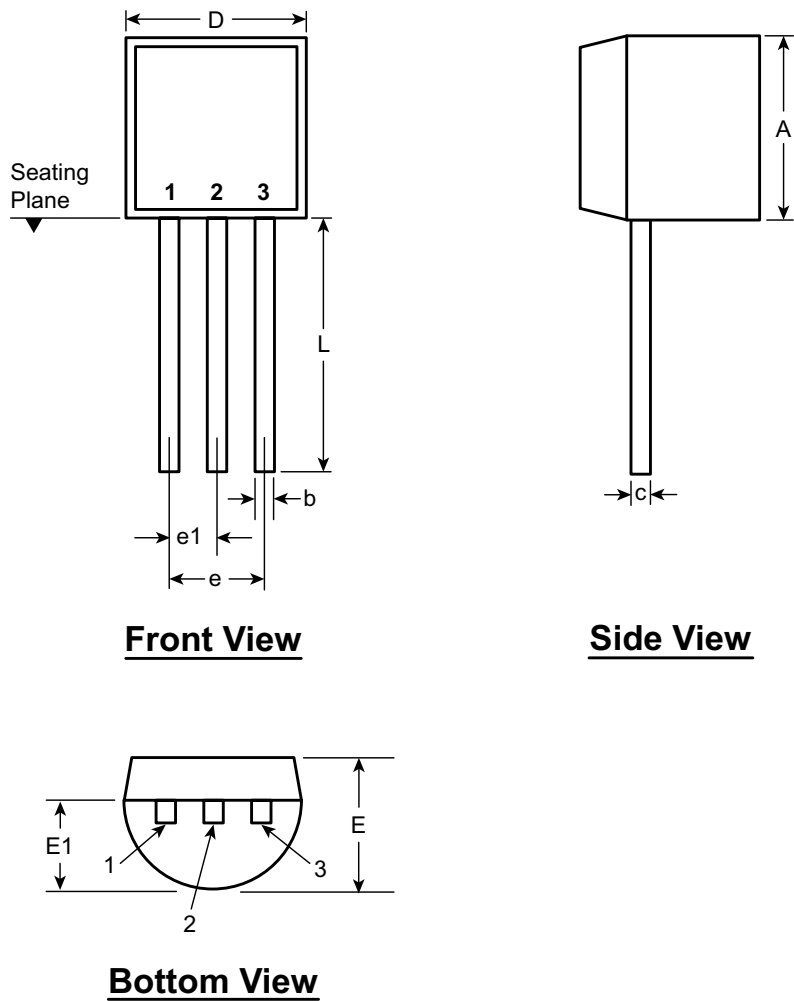
Maximum Rated Safe Operating Area



Thermal Response Characteristics



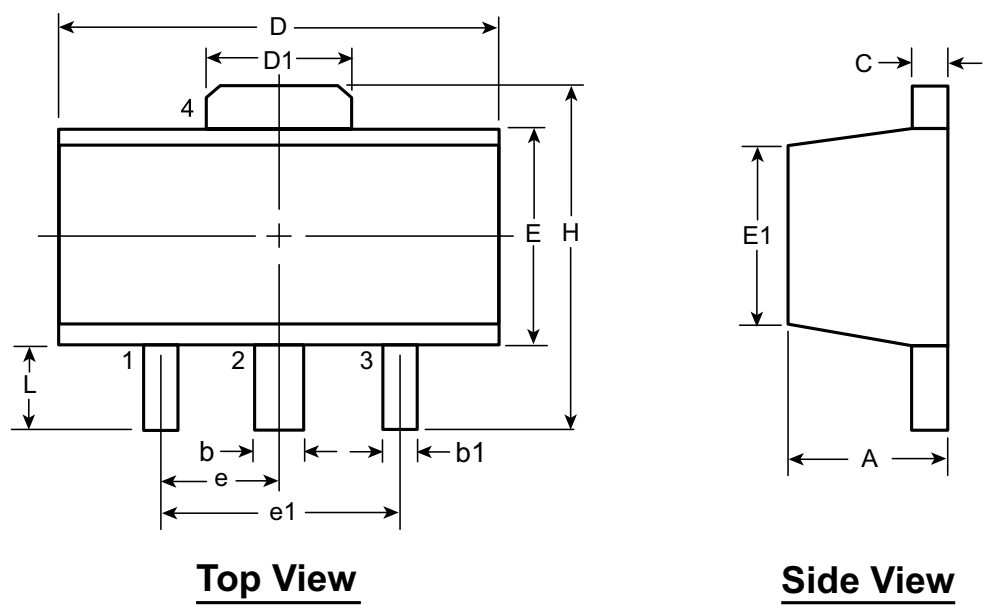
3-Lead TO-92 Package Outline (N3)



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.#: DSPD-3TO92N3, Version E041009.

3-Lead TO-243AA (SOT-89) Package Outline (N8)



Symbol		A	b	b1	C	D	D1	E	E1	e	e1	H	L
Dimensions (mm)	MIN	1.40	0.44	0.36	0.35	4.40	1.62	2.29	2.00†	1.50 BSC	3.00 BSC	3.94	0.73†
	NOM	-	-	-	-	-	-	-	-			-	-
	MAX	1.60	0.56	0.48	0.44	4.60	1.83	2.60	2.29			4.25	1.20

JEDEC Registration TO-243, Variation AA, Issue C, July 1986.

† This dimension differs from the JEDEC drawing

Drawings not to scale.

Supertex Doc. #: DSPD-3TO243AAN8, Version F111010.

(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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