

Thermal Characteristics

Package	I_D (continuous) [†]	I_D (pulsed)	Power Dissipation @ $T_c = 25^\circ\text{C}$	$I_{DR}^{\dagger}$	I_{DRM}
TO-243AA (SOT-89)	890mA	4.5A	1.6W [‡]	890mA	4.5A

Notes:

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

[‡] $T_A = 25^\circ\text{C}$. Mounted on FR5 Board, 25mm x 25mm x 1.57mm.

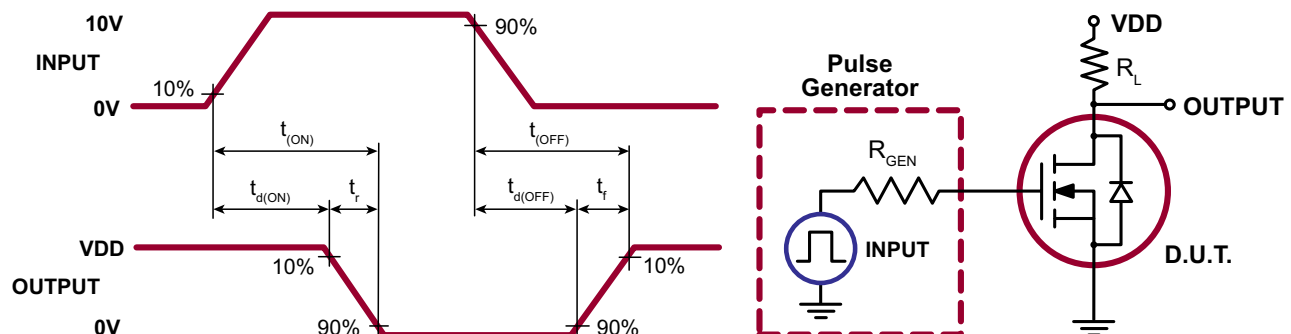
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Sym	Parameter	Min	Typ	Max	Units	Conditions
BV_{DSS}	Drain-to-source breakdown voltage	40	-	-	V	$V_{GS} = 0V, I_D = 2.0mA$
$V_{GS(th)}$	Gate threshold voltage	0.6	-	1.6	V	$V_{GS} = V_{DS}, I_D = 1.0mA$
$\Delta V_{GS(th)}$	Change in $V_{GS(th)}$ with temperature	-	-3.8	-4.5	mV/ $^\circ\text{C}$	$V_{GS} = V_{DS}, I_D = 1.0mA$
I_{GSS}	Gate body leakage	-	-	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	1.0	1.7	-	A	$V_{GS} = 5.0V, V_{DS} = 15V$
		4.0	4.5	-		$V_{GS} = 10V, V_{DS} = 15V$
$R_{DS(ON)}$	Static drain-to-source on-state resistance	-	1.25	1.5	Ω	$V_{GS} = 5.0V, I_D = 300mA$
		-	0.8	1.0		$V_{GS} = 10V, I_D = 1.5A$
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with temperature	-	-	0.75	%/ $^\circ\text{C}$	$V_{GS} = 10V, I_D = 1.5A$
G_{FS}	Forward transconductance	500	700	-	mmho	$V_{DS} = 15V, I_D = 2.0A$
C_{ISS}	Input capacitance	-	70	125	pF	$V_{GS} = 0V,$ $V_{DS} = 20V,$ $f = 1.0MHz$
C_{OSS}	Common source output capacitance	-	50	70		
C_{RSS}	Reverse transfer capacitance	-	20	25		
$t_{d(ON)}$	Turn-on delay time	-	-	10	ns	$V_{DD} = 20V,$ $I_D = 500mA,$ $R_{GEN} = 25\Omega$
t_r	Rise time	-	-	10		
$t_{d(OFF)}$	Turn-off delay time	-	-	25		
t_f	Fall time	-	-	13		
V_{SD}	Diode forward voltage drop	-	1.2	1.8	V	$V_{GS} = 0V, I_{SD} = 1.5A$
t_{rr}	Reverse recovery time	-	300	-	ns	$V_{GS} = 0V, I_{SD} = 1.0mA$

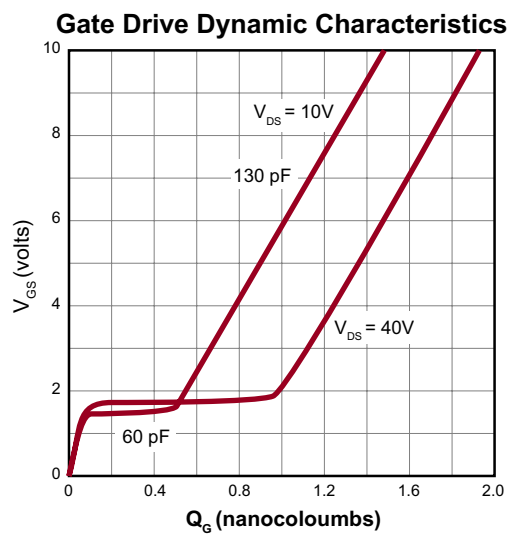
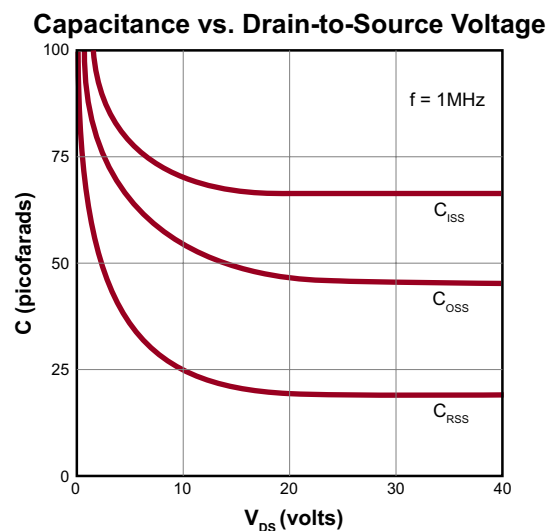
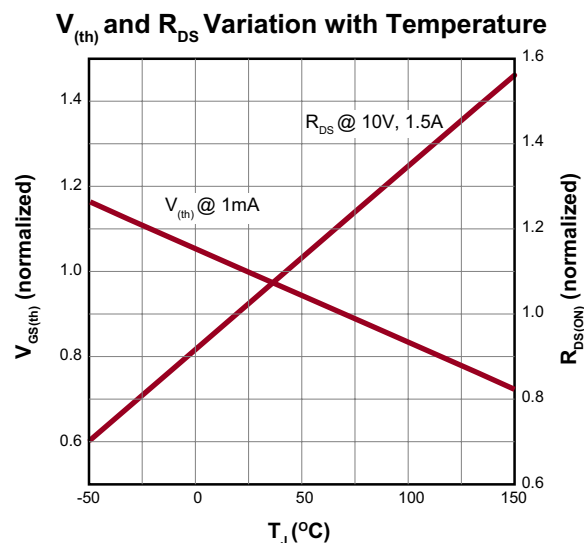
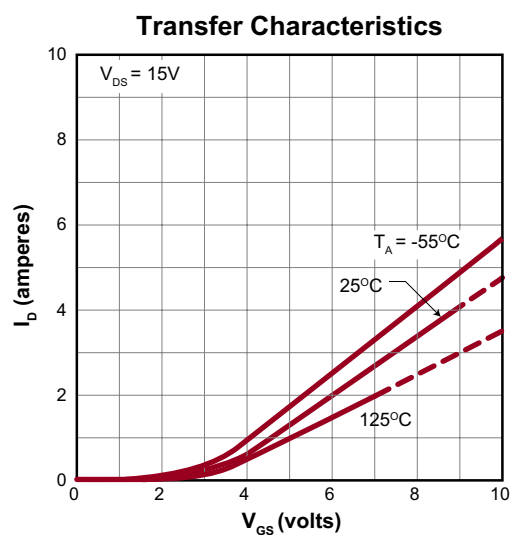
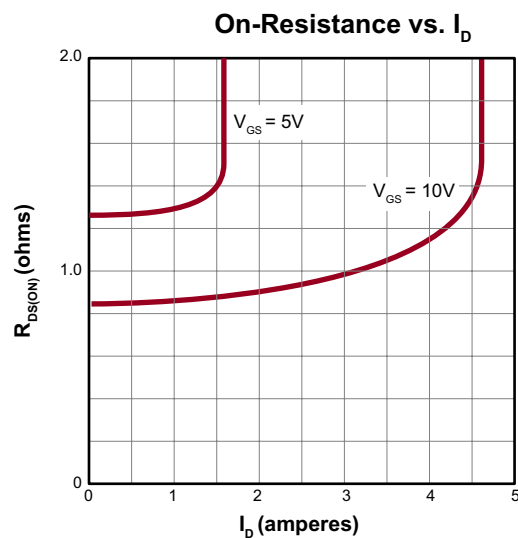
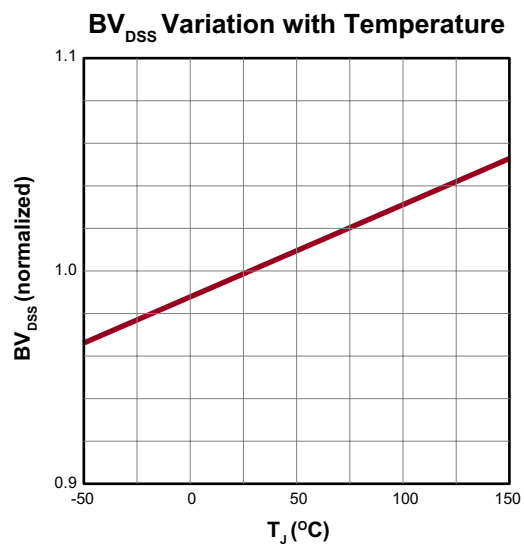
Notes:

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

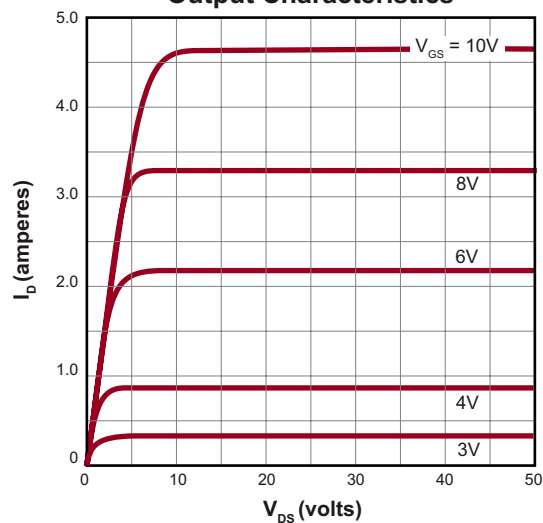


Typical Performance Curves

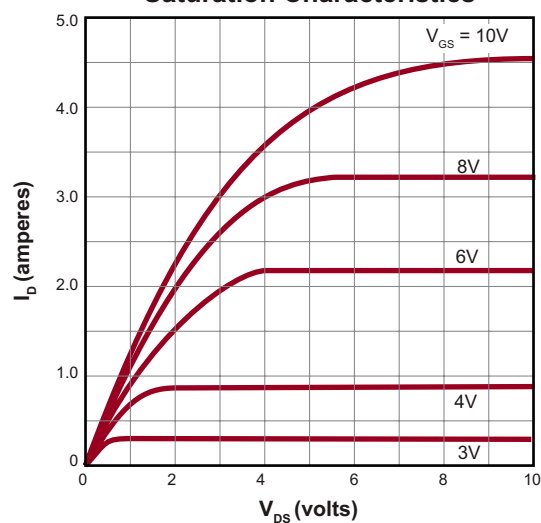


Typical Performance Curves (cont.)

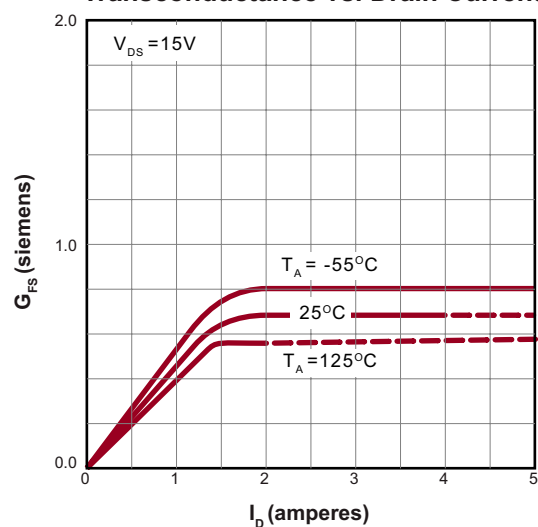
Output Characteristics



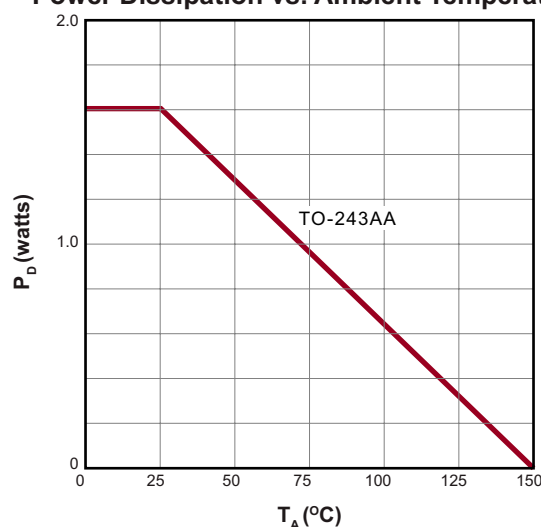
Saturation Characteristics



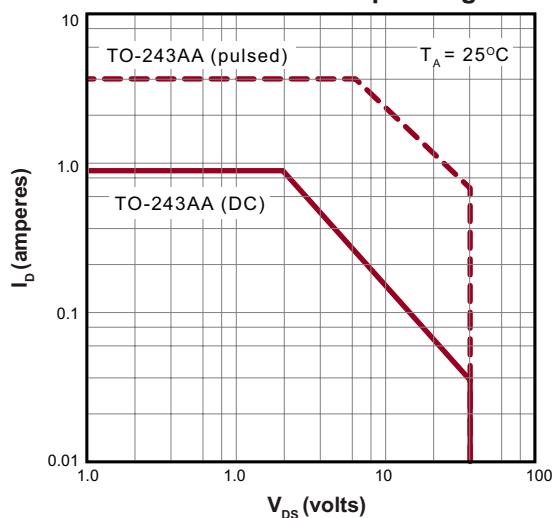
Transconductance vs. Drain Current



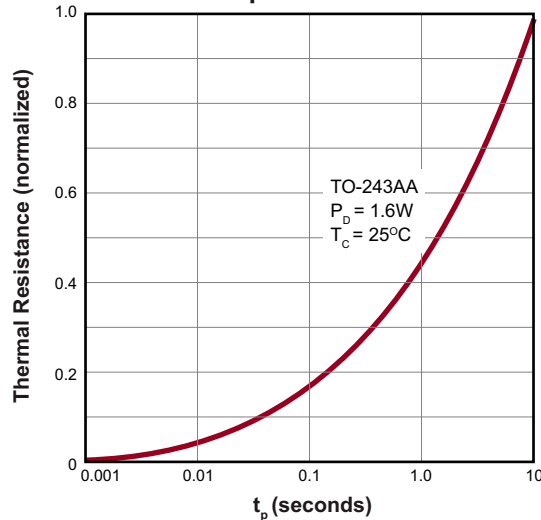
Power Dissipation vs. Ambient Temperature



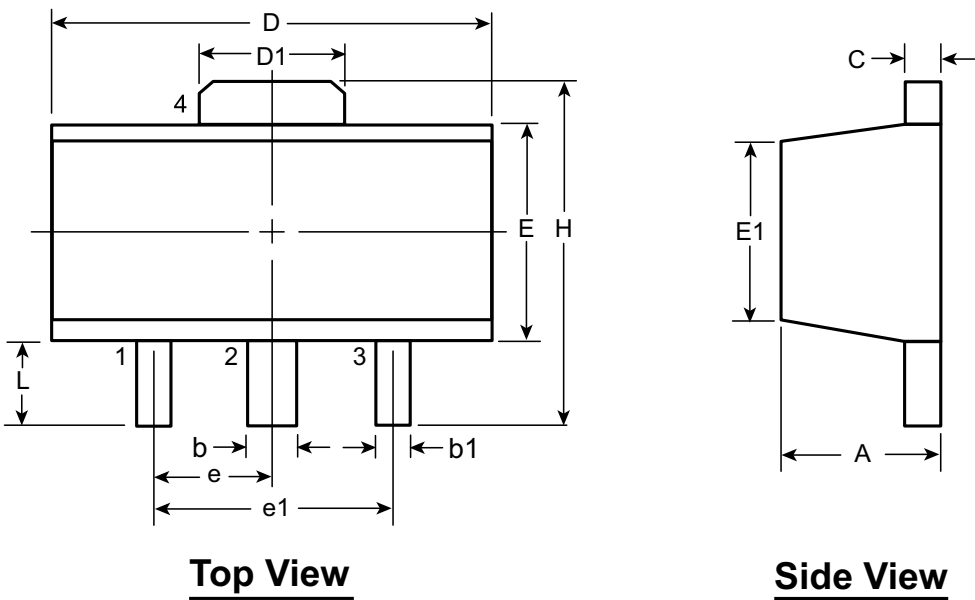
Maximum Rated Safe Operating Area



Thermal Response Characteristics



3-Lead TO-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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