


# JANTX2N6851, JANTXV2N6851 Device

## Electrical Characteristics @ T<sub>j</sub> = 25°C (Unless Otherwise Specified)

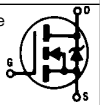
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV <sub>DSS</sub>	Drain-to-Source Breakdown Voltage	-200	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -1.0 mA
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Temperature Coefficient of Breakdown Voltage	—	-0.22	—	V/°C	Reference to 25°C, I <sub>D</sub> = -1.0 mA
RDS(on)	Static Drain-to-Source	—	—	0.80	Ω	V <sub>GS</sub> = -10V, I <sub>D</sub> = -2.4A <sup>④</sup>
	On-State Resistance	—	—	1.68		V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.0A
VGS(th)	Gate Threshold Voltage	-2.0	—	-4.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
gfs	Forward Transconductance	2.2	—	—	S (r)	V <sub>DS</sub> > -15V, I <sub>DS</sub> = -2.4A <sup>④</sup>
IDSS	Zero Gate Voltage Drain Current	—	—	-25	μA	V <sub>DS</sub> = 0.8 x Max Rating, V <sub>GS</sub> = 0V
		—	—	-250		V <sub>DS</sub> = 0.8 x Max Rating V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C
IGSS	Gate-to-Source Leakage Forward	—	—	-100	nA	V <sub>GS</sub> = -20V
IGSS	Gate-to-Source Leakage Reverse	—	—	100		V <sub>GS</sub> = 20V
Qg	Total Gate Charge	14.7	—	34.8	nC	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.0A
Qgs	Gate-to-Source Charge	0.8	—	7.0		V <sub>DS</sub> = Max. Rating x 0.5
Qgd	Gate-to-Drain ("Miller") Charge	5.0	—	17		see figures 6 and 13
td(on)	Turn-On Delay Time	—	—	50	ns	V <sub>DD</sub> = -100V, I <sub>D</sub> = -4.0A, R <sub>G</sub> = 7.5Ω, V <sub>GS</sub> = -10V
tr	Rise Time	—	—	100		
td(off)	Turn-Off Delay Time	—	—	100		
tf	Fall Time	—	—	80		see figure 10
LD	Internal Drain Inductance	—	5.0	—	nH	Measured from the drain lead, 6mm (0.25 in.) from package to center of die.
LS	Internal Source Inductance	—	15.0	—		Measured from the source lead, 6mm (0.25 in.) from package to source bonding pad.
Ciss	Input Capacitance	—	700	—	pF	V <sub>GS</sub> = 0V, V <sub>DS</sub> = -25V f = 1.0 MHz see figure 5
Coss	Output Capacitance	—	200	—		
Crss	Reverse Transfer Capacitance	—	40	—		

## Source-Drain Diode Ratings and Characteristics

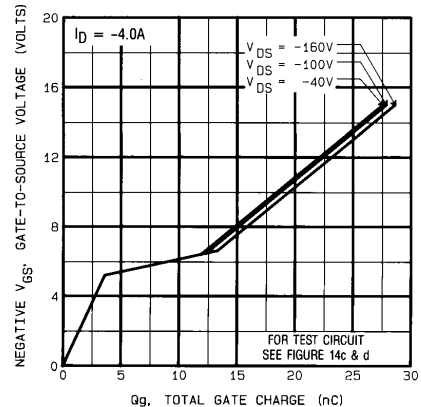
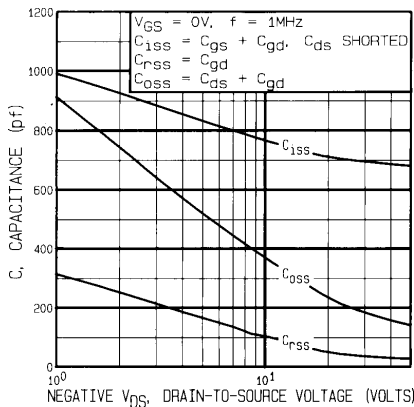
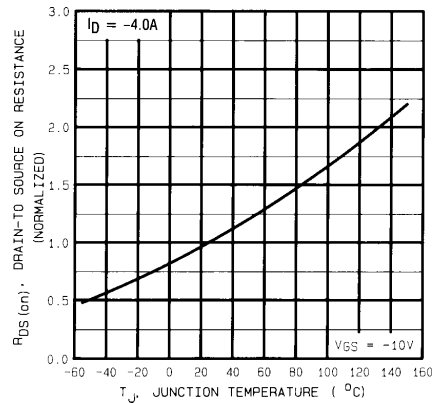
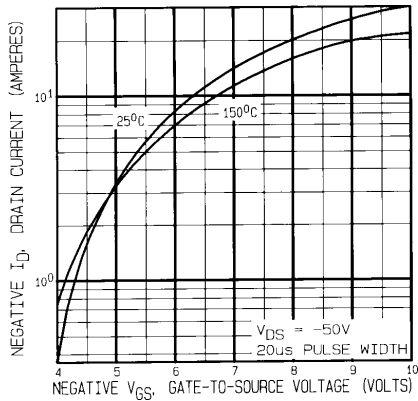
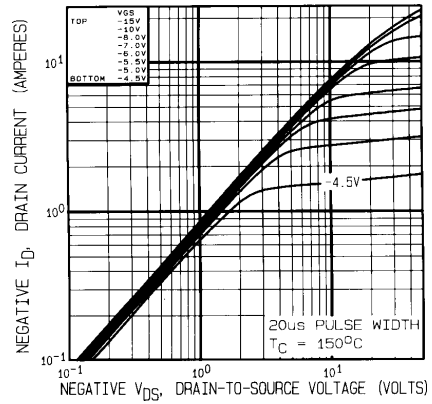
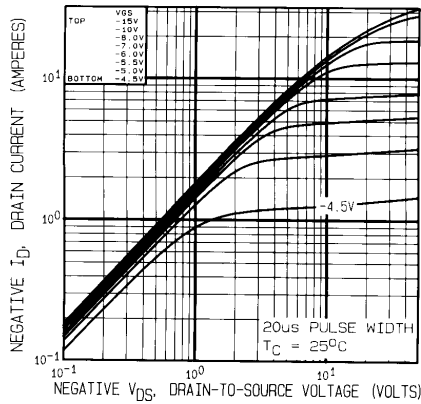
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current (Body Diode)	—	—	-4.0	A	Modified MOSFET symbol showing the integral reverse p-n junction rectifier. 
ISM	Pulse Source Current (Body Diode) ①	—	—	-16		
VSD	Diode Forward Voltage	—	—	-6.0	V	Tj = 25°C, IS = -4.0A, VGS = 0V ④
trr	Reverse Recovery Time	—	—	400	ns	Tj = 25°C, IF = -4.0A, di/dt ≤ -100A/μs VDD ≤ -50V ④
QRR	Reverse Recovery Charge	—	—	4.0	μC	
ton	Forward Turn-On Time	Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by LS + LD.				

## Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RthJC	Junction-to-Case	—	—	5.0	K/W	
RthJA	Junction-to-Ambient	—	—	175		Typical socket mount



# JANTX2N6851, JANTXV2N6851 Device



JANTX2N6851, JANTXV2N6851 Device

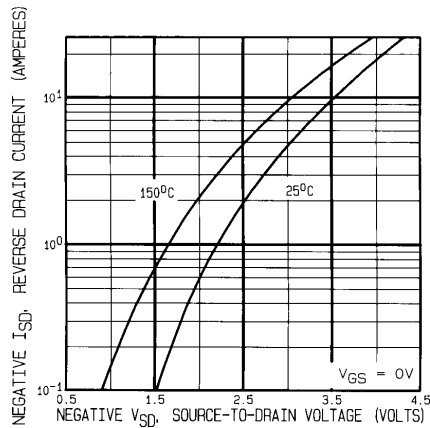


Fig. 7 — Typical Source-to-Drain Diode Forward Voltage

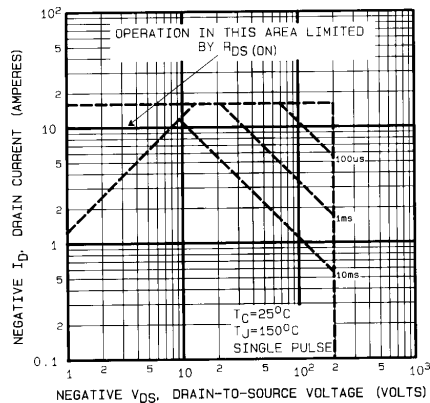


Fig. 8 — Maximum Safe Operating Area

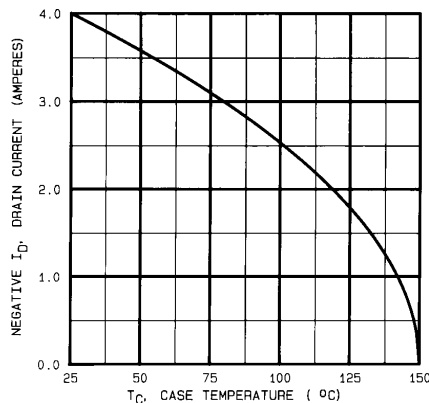


Fig. 9 — Maximum Drain Current Vs. Case Temperature

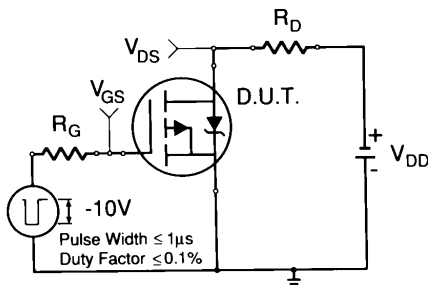


Fig. 10a — Switching Time Test Circuit

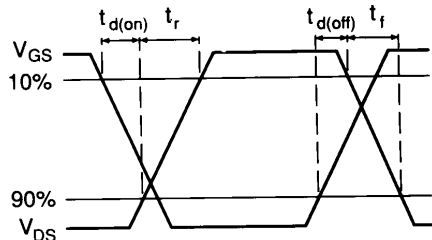


Fig. 10b — Switching Time Waveforms

# JANTX2N6851, JANTXV2N6851 Device

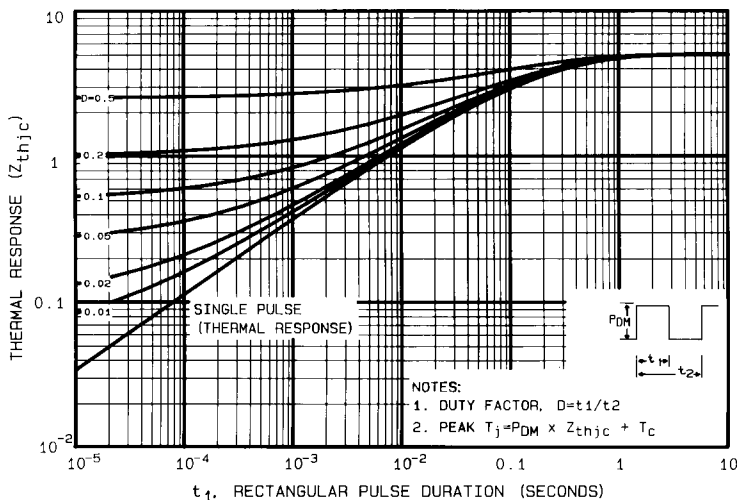


Fig. 11 — Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

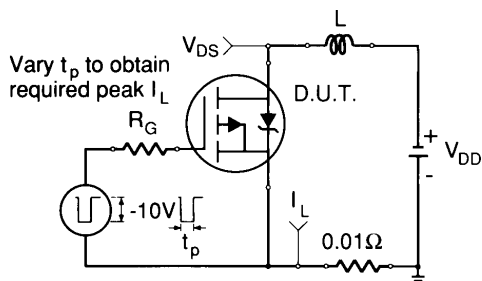


Fig. 12a — Unclamped Inductive Test Circuit

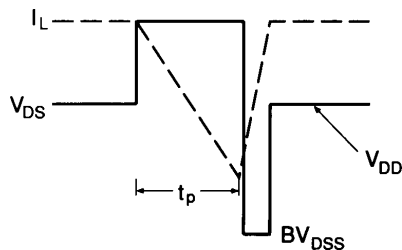


Fig. 12b — Unclamped Inductive Waveforms

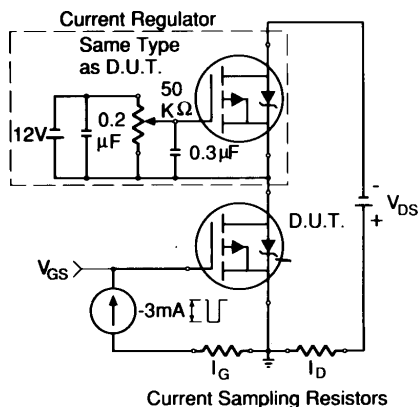


Fig. 13a — Gate Charge Test Circuit

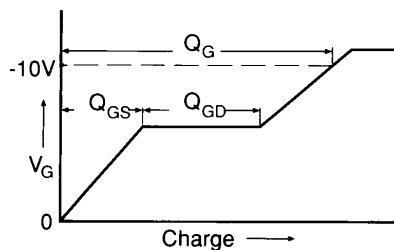
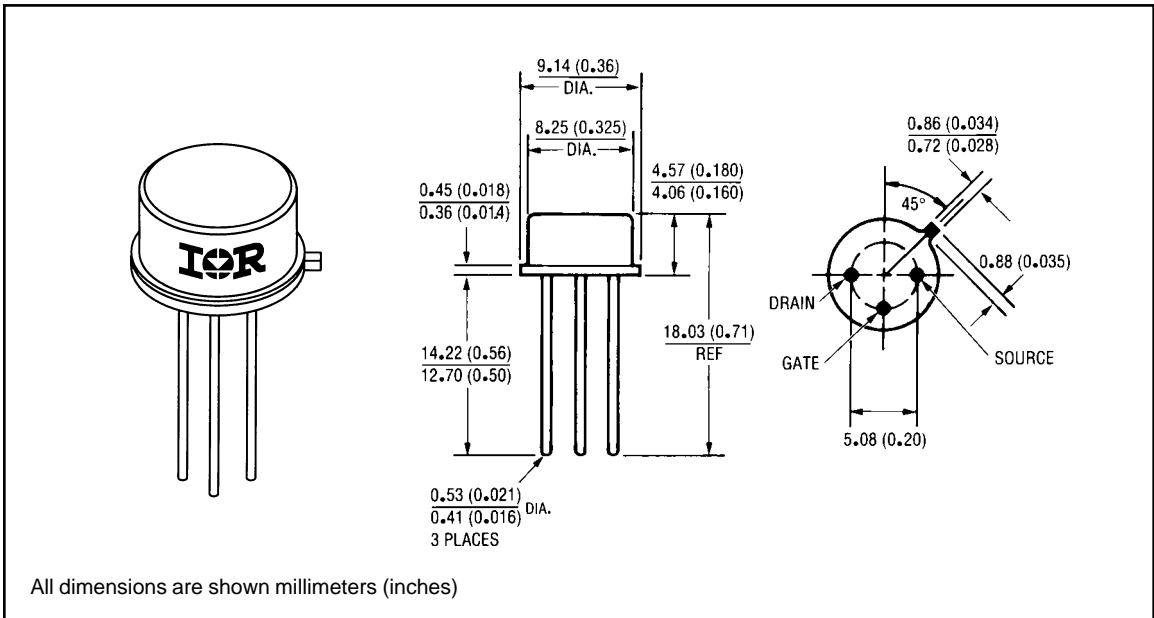


Fig. 13b — Basic Gate Charge Waveform

## JANTX2N6851, JANTXV2N6851 Device

- ① Repetitive Rating; Pulse width limited by maximum junction temperature.  
(see figure 11)
- ② @  $V_{DD} = -50V$ , Starting  $T_J = 25^\circ C$ ,  
 $E_{AS} = [0.5 * L * (I_L^2) * [BV_{DSS}/(BV_{DSS} - V_{DD})]]$   
Peak  $I_L = -4.0A$ ,  $V_{GS} = -10V$ ,  $25 \leq R_G \leq 200\Omega$
- ③  $I_{SD} \leq -4.0A$ ,  $di/dt \leq -120A/\mu s$ ,  
 $V_{DD} \leq BV_{DSS}$ ,  $T_J \leq 150^\circ C$
- ④ Pulse width  $\leq 300 \mu s$ ; Duty Cycle  $\leq 2\%$
- ⑤  $K/W = ^\circ C/W$   
 $W/K = W/^\circ C$

### Case Outline and Dimensions — TO-205AF (TO-39)



International  
**IR** Rectifier

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Data and specifications subject to change without notice.

10/96