

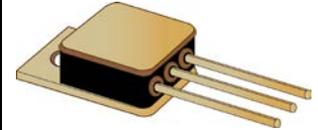


P-CHANNEL MOSFET
Qualified per MIL-PRF-19500/595

Qualified Levels:
 JAN, JANTX, and
 JANTXV

DESCRIPTION

This 2N7236 switching transistor is military qualified up to the JANTXV level for high-reliability applications. This device is also available in a low profile U surface mount package. Microsemi also offers numerous other transistor products to meet higher and lower power ratings with various switching speed requirements in both through-hole and surface-mount packages.



TO-254AA Package

Important: For the latest information, visit our website <http://www.microsemi.com>.

FEATURES

- JEDEC registered 2N7236 number.
- JAN, JANTX, and JANTXV qualifications are available per MIL-PRF-19500/595. (See [part nomenclature](#) for all available options.)
- RoHS compliant by design.

Also available in:

“U” (SMD-1 or TO-267AB) package
 (surface mount)
 [2N7236U](#)

APPLICATIONS / BENEFITS

- Low-profile design.
- Military and other high-reliability applications.

MAXIMUM RATINGS @ T_A = +25 °C unless otherwise stated

Parameters / Test Conditions	Symbol	Value	Unit
Operating & Storage Junction Temperature Range	T _J & T _{stg}	-55 to +150	°C
Thermal Resistance Junction-to-Case	R _{θJC}	1.0	°C/W
Total Power Dissipation	P _T	4 125	W
		@ T _A = +25 °C @ T _C = +25 °C ⁽¹⁾	
Gate-Source Voltage, dc	V _{GS}	± 20	V
Drain Current, dc @ T _C = +25 °C ⁽²⁾	I _{D1}	-18	A
Drain Current, dc @ T _C = +100 °C ⁽²⁾	I _{D2}	-11	A
Off-State Current (Peak Total Value) ⁽³⁾	I _{DM}	-72	A (pk)
Source Current	I _S	-18	A

- NOTES:**
1. Derate linearly by 1.0 W/°C for T_C > +25 °C.
 2. The following formula derives the maximum theoretical I_D limit. I_D is limited by package and internal wires and may also be limited by pin diameter:

$$I_D = \sqrt{\frac{T_J(\text{max}) - T_C}{R_{\theta JC} \times R_{DS(on)} @ T_J(\text{max})}}$$

3. I_{DM} = 4 x I_{D1} as calculated in note 2.

MSC – Lawrence

6 Lake Street,
 Lawrence, MA 01841
 Tel: 1-800-446-1158 or
 (978) 620-2600
 Fax: (978) 689-0803

MSC – Ireland

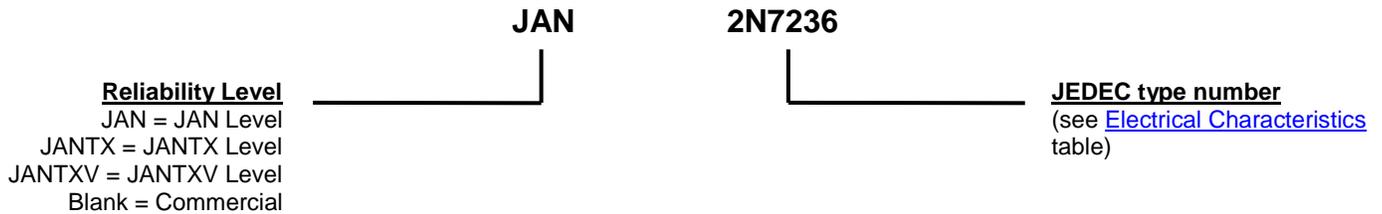
Gort Road Business Park,
 Ennis, Co. Clare, Ireland
 Tel: +353 (0) 65 6840044
 Fax: +353 (0) 65 6822298

Website:

www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Ceramic and gold over nickel plated steel.
- TERMINALS: Gold over nickel plated tungsten/copper.
- MARKING: Manufacturer's ID, part number, date code, BeO.
- WEIGHT: 6.5 grams.
- See [Package Dimensions](#) on last page.

PART NOMENCLATURE

SYMBOLS & DEFINITIONS

Symbol	Definition
di/dt	Rate of change of diode current while in reverse-recovery mode, recorded as maximum value.
I _F	Forward current
R _G	Gate drive impedance
V _{DD}	Drain supply voltage
V _{DS}	Drain source voltage, dc
V _{GS}	Gate source voltage, dc

ELECTRICAL CHARACTERISTICS @ $T_A = +25\text{ }^\circ\text{C}$, unless otherwise noted

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = 1.0\text{ mA}$	$V_{(BR)DSS}$	-100		V
Gate-Source Voltage (Threshold) $V_{DS} \geq V_{GS}, I_D = -0.25\text{ mA}$ $V_{DS} \geq V_{GS}, I_D = -0.25\text{ mA}, T_J = +125\text{ }^\circ\text{C}$ $V_{DS} \geq V_{GS}, I_D = -0.25\text{ mA}, T_J = -55\text{ }^\circ\text{C}$	$V_{GS(th)1}$ $V_{GS(th)2}$ $V_{GS(th)3}$	-2.0 -1.0	-4.0 -5.0	V
Gate Current $V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$ $V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}, T_J = +125\text{ }^\circ\text{C}$	I_{GSS1} I_{GSS2}		± 100 ± 200	nA
Drain Current $V_{GS} = 0\text{ V}, V_{DS} = -80\text{ V}$	I_{DSS1}		-25	μA
Drain Current $V_{GS} = 0\text{ V}, V_{DS} = -100\text{ V}, T_J = +125\text{ }^\circ\text{C}$	I_{DSS2}		-1.0	mA
Drain Current $V_{GS} = 0\text{ V}, V_{DS} = -80\text{ V}, T_J = +125\text{ }^\circ\text{C}$	I_{DSS3}		-0.25	mA
Static Drain-Source On-State Resistance $V_{GS} = 10\text{ V}, I_D = -11.0\text{ A pulsed}$	$r_{DS(on)1}$		0.20	Ω
Static Drain-Source On-State Resistance $V_{GS} = -10\text{ V}, I_D = -18.0\text{ A pulsed}$	$r_{DS(on)2}$		0.22	Ω
Static Drain-Source On-State Resistance $T_J = +125\text{ }^\circ\text{C}$ $V_{GS} = -10\text{ V}, I_D = -11.0\text{ A pulsed}$	$r_{DS(on)3}$		0.34	Ω
Diode Forward Voltage $V_{GS} = 0\text{ V}, I_D = -18.0\text{ A pulsed}$	V_{SD}		-5.0	V

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Gate Charge:				
On-State Gate Charge $V_{GS} = -10\text{ V}, I_D = -18.0\text{ A}, V_{DS} = -50\text{ V}$	$Q_{g(on)}$		60	nC
Gate to Source Charge $V_{GS} = -10\text{ V}, I_D = -18.0\text{ A}, V_{DS} = -50\text{ V}$	Q_{gs}		13	nC
Gate to Drain Charge $V_{GS} = -10\text{ V}, I_D = -18.0\text{ A}, V_{DS} = -50\text{ V}$	Q_{gd}		35.2	nC

ELECTRICAL CHARACTERISTICS @ $T_A = +25\text{ }^\circ\text{C}$, unless otherwise noted (continued)
SWITCHING CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Turn-on delay time $I_D = -11.0\text{ A}$, $V_{GS} = -10\text{ V}$, $R_G = 9.1\ \Omega$, $V_{DD} = -50\text{ V}$	$t_{d(on)}$		35	ns
Rinse time $I_D = -11.0\text{ A}$, $V_{GS} = -10\text{ V}$, $R_G = 9.1\ \Omega$, $V_{DD} = -50\text{ V}$	t_r		85	ns
Turn-off delay time $I_D = -11.0\text{ A}$, $V_{GS} = -10\text{ V}$, $R_G = 9.1\ \Omega$, $V_{DD} = -50\text{ V}$	$t_{d(off)}$		85	ns
Fall time $I_D = -11.0\text{ A}$, $V_{GS} = -10\text{ V}$, $R_G = 9.1\ \Omega$, $V_{DD} = -50\text{ V}$	t_f		65	ns
Diode Reverse Recovery Time $di/dt \leq 100\text{ A}/\mu\text{s}$, $V_{DD} \leq 30\text{ V}$, $I_F = -18.0\text{ A}$	t_{rr}		280	ns

GRAPHS

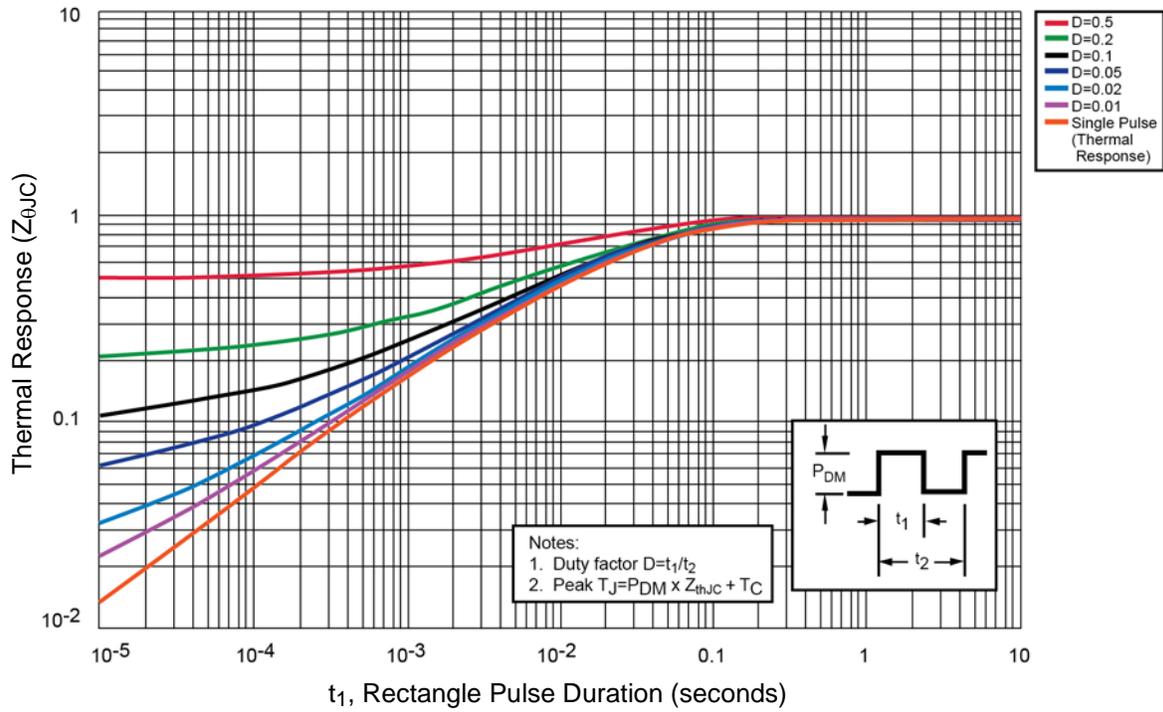


FIGURE 1
 Thermal Impedance Curves

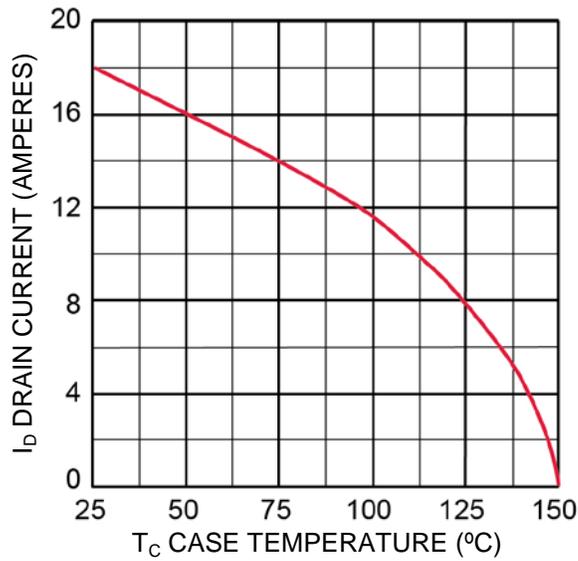


FIGURE 2
 Maximum Drain Current vs. Case Temperature Graphs

GRAPHS (continued)

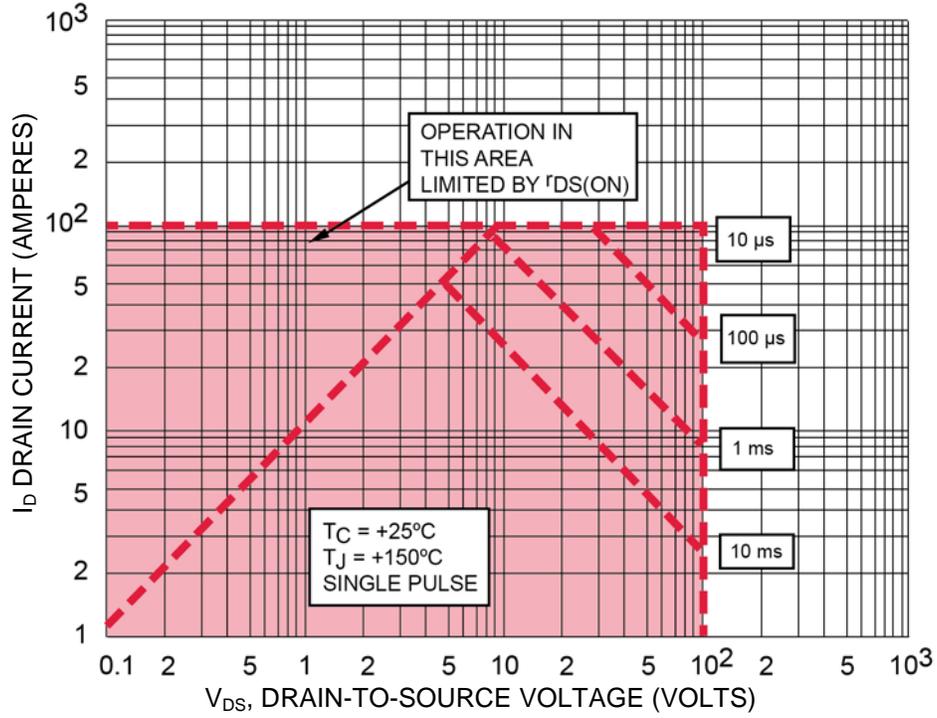
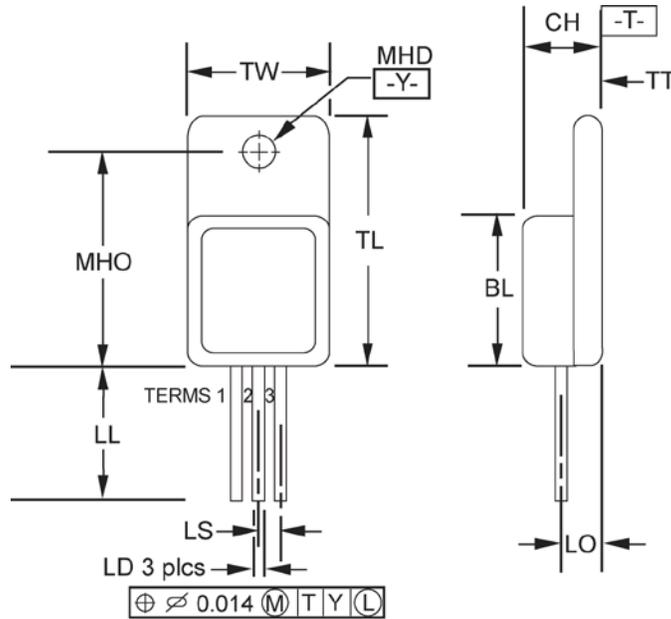


FIGURE 3
Maximum Safe Operating Area

PACKAGE DIMENSIONS

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Protrusion thickness of ceramic eyelets included in dimension LL.
4. All terminals are isolated from case.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

Ltr	Dimensions				Notes
	Inch		Millimeters		
	Min	Max	Min	Max	
BL	.535	.545	13.59	13.84	
CH	.249	.260	6.32	6.60	
LD	.035	.045	0.89	1.14	
LL	.510	.570	12.95	14.48	3
LO	.150 BSC		3.81 BSC		
LS	.150 BSC		3.81 BSC		
MHD	.139	.149	3.53	3.78	
MHO	.665	.685	16.89	17.40	
TL	.790	.800	20.07	20.32	4
TT	.040	.050	1.02	1.27	4
TW	.535	.545	13.59	13.84	
Term 1	Drain				
Term 2	Source				
Term 3	Gate				