RoHS
Available on commercial versions

N-CHANNEL MOSFET

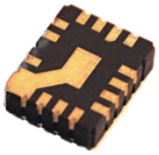
Qualified per MIL-PRF-19500/555

Qualified Levels: JAN, JANTX, and JANTXV

DESCRIPTION

This 2N6790U device is military qualified up to a JANTXV level for high-reliability applications. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.

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



U-18 LCC Package

Also available in:

TO-205AF Package
(leaded)
2N6790U

FEATURES

- JEDEC registered 2N6790U.
- JAN, JANTX, and JANTXV qualification per MIL-PRF-19500/555 available.
- RoHS compliant versions available (commercial grade only).

APPLICATIONS / BENEFITS

- High frequency operation.
- Lightweight package.
- ESD to class 1A.

MAXIMUM RATINGS @ T_C = +25 °C unless otherwise noted

Parameters / Test Conditions	Symbol	Value	Unit
Junction & Storage Temperature	T_J, T_{stg}	-55 to +150	°C
Thermal Resistance Junction-to-Case	$R_{\Theta JC}$	8.93	ºC/W
Drain to Gate Voltage	V_{DG}	200	V
Drain – Source Voltage	V_{DS}	200	V
Gate – Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ T_C = +25 °C	I_{D1}	2.8	A
Continuous Drain Current @ T_C = +100 °C	I_{D2}	1.8	A
Off-State Power Dissipation (1)	P_{D1}	14	W
Source Current – Drain Diode (Forward Biased V_{SD})	I_S	2.8	A
Off-State Current	I_{DM}	11	A (pk)
Drain to Source On State Resistance (2)	$r_{DS(on)}$	0.80	Ω

Notes: 1. Derated linearly by 0.11 W/°C for T_C > +25 °C.
2. V_{GS} = 10 V, I_D = 1.8 A

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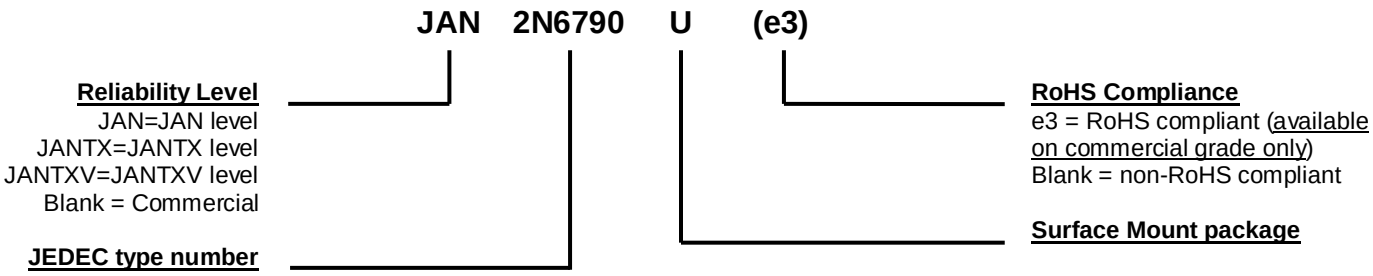
MECHANICAL and PACKAGING

- CASE: Ceramic LCC-18 with kovar gold plated lid.
- TERMINALS: Gold plating over nickel.
- MARKING: Manufacturer's ID, part number, date code, ESD symbol at Pin 1 location.
- POLARITY: See pad layout.
- TAPE & REEL option: Standard per EIA-481-D. Consult factory for quantities.
- See Package Dimensions on last page.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS

Symbol	Definition
I_D	Drain current.
I_F	Forward current.
T_C	Case temperature.
V_{DD}	Drain supply voltage.
V_{DS}	Drain to source voltage.
V_{GS}	Gate to source voltage.

ELECTRICAL CHARACTERISTICS @ T_A = +25 °C, unless otherwise noted

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERTICS				
Drain-Source Breakdown Voltage V_{GS} = 0 V, I_D = 1 mA	$V_{(BR)DSS}$	200		V
Gate-Source Voltage (Threshold) $V_{DS} \geq V_{GS}$, I_D = 0.25 mA $V_{DS} \geq V_{GS}$, I_D = 0.25 mA, T_j = +125 °C $V_{DS} \geq V_{GS}$, I_D = 0.25 mA, T_j = -55 °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} = ±20 V, V_{DS} = 0 V V_{GS} = ±20 V, V_{DS} = 0 V, T_j = +125 °C	 I_{GSS1} I_{GSS2}		 ±100 ±200	nA

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERTICS				
Drain Current V_{GS} = 0 V, V_{DS} = 160 V V_{GS} = 0 V, V_{DS} = 160 V, T_j = +125 °C	 I_{DSS1} I_{DSS2}		 25 0.25	 µA mA
Static Drain-Source On-State Resistance V_{GS} = 10 V, I_D = 1.8 A pulsed V_{GS} = 10 V, I_D = 2.8 A pulsed T_j = +125°C V_{GS} = 10 V, I_D = 1.8 A pulsed	 $r_{DS(on)1}$ $r_{DS(on)2}$ $r_{DS(on)3}$		 0.80 0.85 1.50	 Ω Ω Ω
Diode Forward Voltage V_{GS} = 0 V, I_D = 2.8 A pulsed	 V_{SD}		 1.5	 V

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Gate Charge: On-State Gate Charge Gate to Source Charge Gate to Drain Charge	 $Q_{g(on)}$ Q_{gs} Q_{gd}		 14.3 3.0 9.0	nC

SWITCHING CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Switching time tests: Turn-on delay time Rinse time Turn-off delay time Fall time	 I_D = 2.8A, V_{GS} = 10 V Gate drive impedance = 7.5 Ω, V_{DD} = 74 V	 $t_{d(on)}$ t_r $t_{d(off)}$ t_f		 40 50 50 50	ns
Diode Reverse Recovery Time	di/dt = 100 A/µs, $V_{DD} \leq$ 50 V, $I_D = I_{D1}$ = 2.8 A	t_{rr}		400	ns

GRAPHS

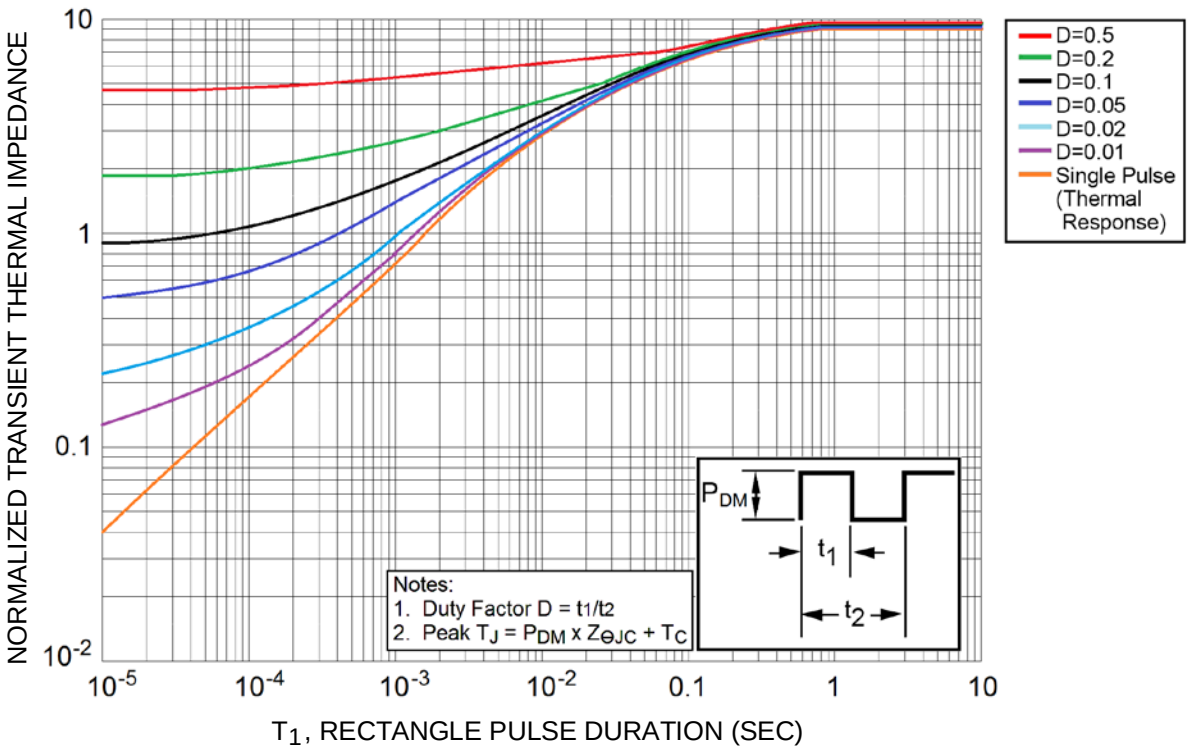


Figure 1
Thermal Impedance Curves

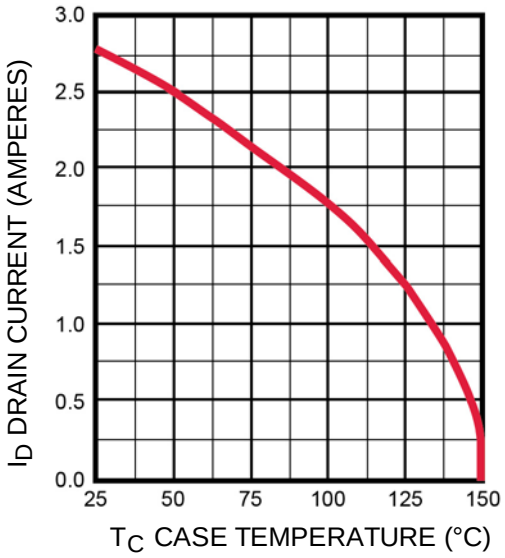


Figure 2
Maximum Drain Current vs. Case Temperature Graph

GRAPHS (continued)

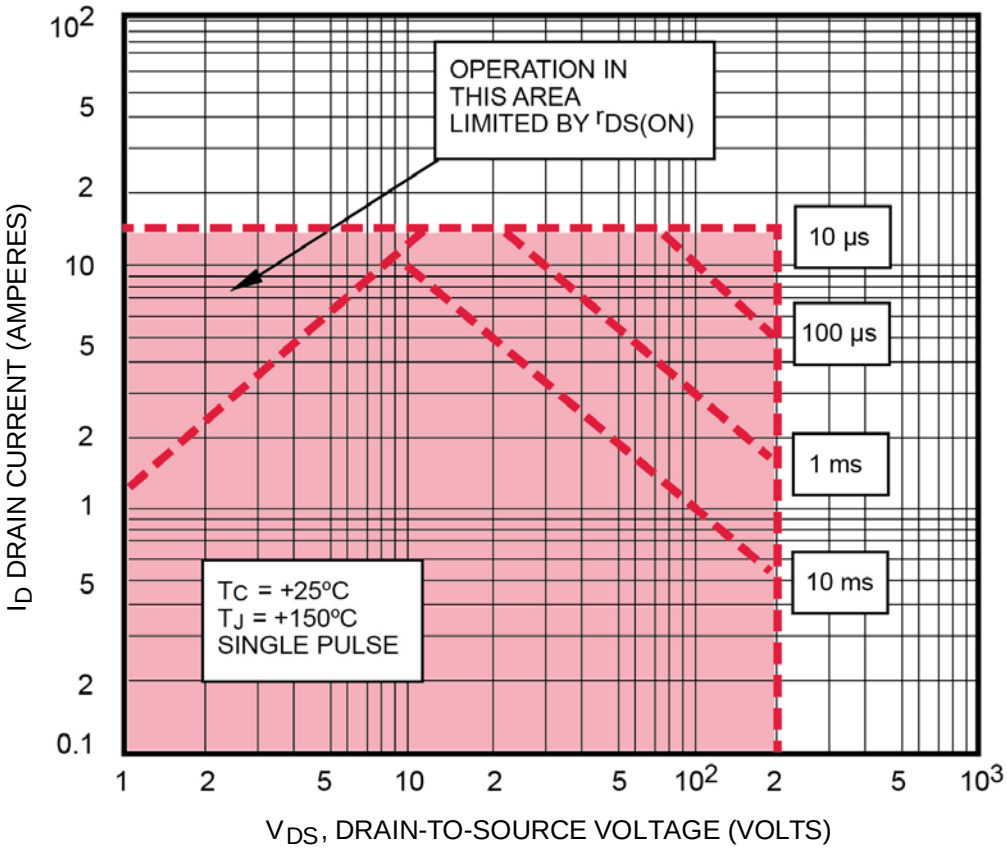
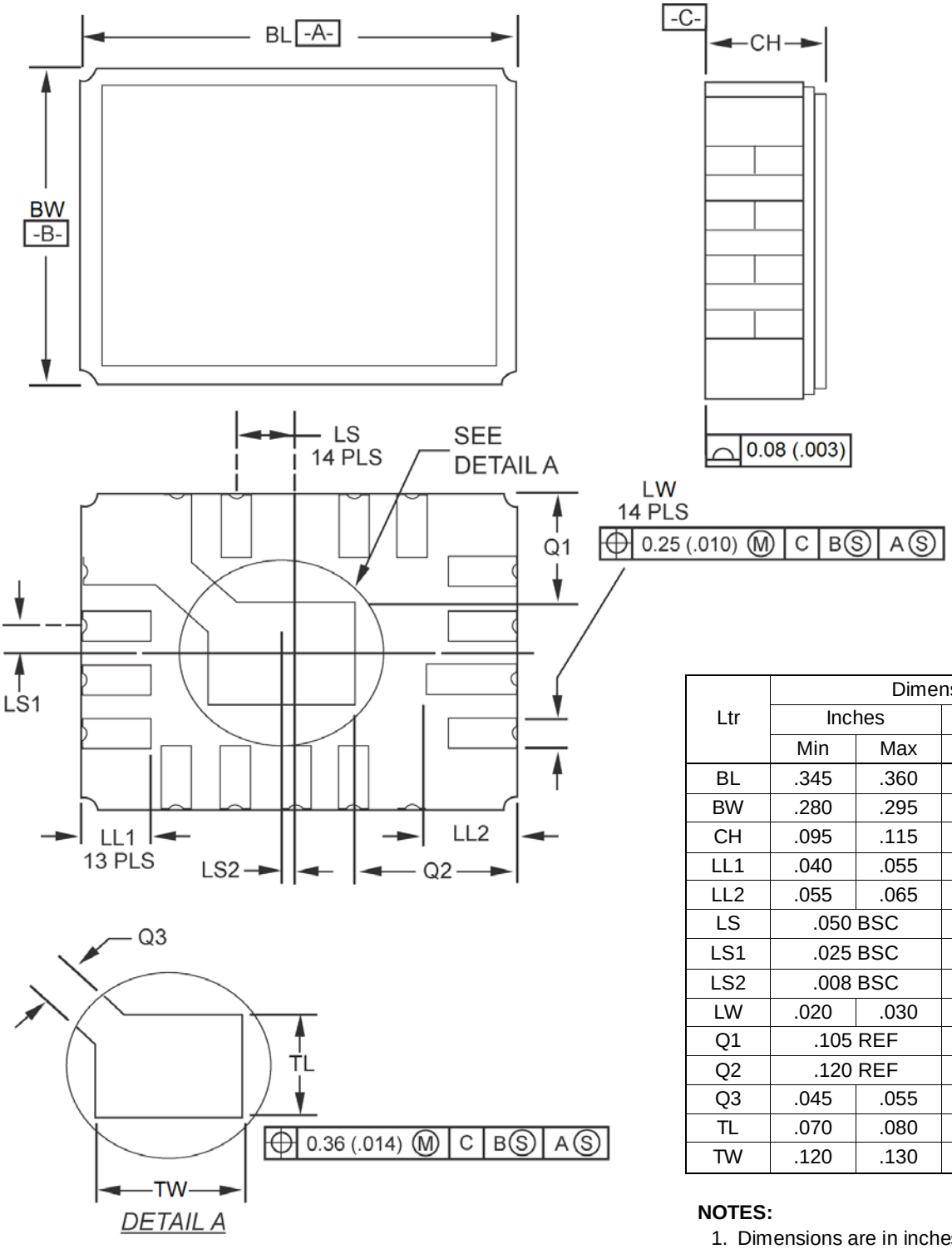


Figure 3
Maximum Safe Operating Area

PACKAGE DIMENSIONS

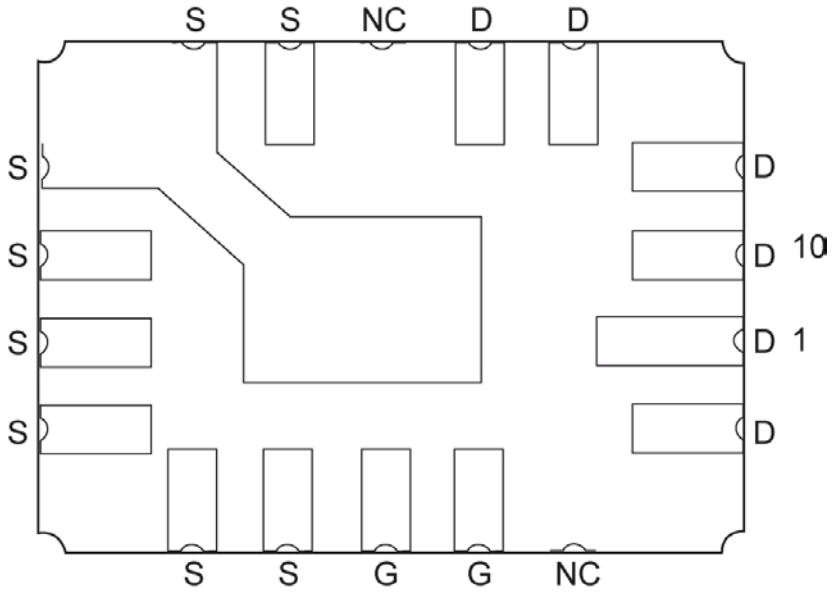


Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.345	.360	8.77	9.14
BW	.280	.295	7.12	7.49
CH	.095	.115	2.42	2.92
LL1	.040	.055	1.02	1.39
LL2	.055	.065	1.40	1.65
LS	.050 BSC		1.27 BSC	
LS1	.025 BSC		0.635 BSC	
LS2	.008 BSC		0.203 BSC	
LW	.020	.030	0.51	0.76
Q1	.105 REF		2.67 REF	
Q2	.120 REF		3.05 REF	
Q3	.045	.055	1.14	1.40
TL	.070	.080	1.78	2.03
TW	.120	.130	3.05	3.30

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

PAD LAYOUT



PAD ASSIGNMENTS