

N-CHANNEL MOSFET

Qualified per MIL-PRF-19500/592

DEVICES

2N7224 2N7224U

LEVELS

JAN
JANTX
JANTXV

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

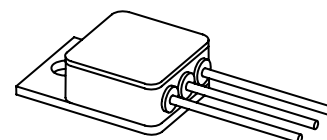
Parameters / Test Conditions	Symbol	Value	Unit
Drain – Source Voltage	V_{DS}	100	Vdc
Gate – Source Voltage	V_{GS}	± 20	Vdc
Continuous Drain Current $T_C = +25^\circ\text{C}$	I_{D1}	34	Adc
Continuous Drain Current $T_C = +100^\circ\text{C}$	I_{D2}	21	Adc
Max. Power Dissipation $T_C = +25^\circ\text{C}$	P_{tl}	150 ⁽¹⁾	W
Drain to Source On State Resistance	$R_{ds(on)}$	0.070 ⁽²⁾	Ω
Operating & Storage Temperature	T_{op}, T_{stg}	-55 to +150	$^\circ\text{C}$

Note: (1) Derated Linearly by 1.2 W/ $^\circ\text{C}$ for $T_C > +25^\circ\text{C}$

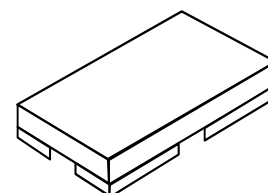
(2) $V_{GS} = 10\text{Vdc}$, $I_D = 21\text{A}$

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Drain-Source Breakdown Voltage $V_{GS} = 0\text{V}$, $I_D = 1\text{mAdc}$	$V_{(BR)DSS}$	100		Vdc
Gate-Source Voltage (Threshold) $V_{DS} \geq V_{GS}$, $I_D = 0.25\text{mA}$ $V_{DS} \geq V_{GS}$, $I_D = 0.25\text{mA}$, $T_j = +125^\circ\text{C}$ $V_{DS} \geq V_{GS}$, $I_D = 0.25\text{mA}$, $T_j = -55^\circ\text{C}$	$V_{GS(th)1}$ $V_{GS(th)2}$ $V_{GS(th)3}$	2.0 1.0	4.0 5.0	Vdc
Gate Current $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$ $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$, $T_j = +125^\circ\text{C}$	I_{GSS1} I_{GSS2}		± 100 ± 200	nAdc
Drain Current $V_{GS} = 0\text{V}$, $V_{DS} = 80\text{V}$ $V_{GS} = 0\text{V}$, $V_{DS} = 80\text{V}$, $T_j = +125^\circ\text{C}$	I_{DSS1} I_{DSS2}		25 0.25	μAdc mAdc
Static Drain-Source On-State Resistance $V_{GS} = 10\text{V}$, $I_D = 21\text{A}$ pulsed $V_{GS} = 10\text{V}$, $I_D = 34\text{A}$ pulsed $T_j = +125^\circ\text{C}$ $V_{GS} = 10\text{V}$, $I_D = 21\text{A}$ pulsed	$r_{DS(on)1}$ $r_{DS(on)2}$ $r_{DS(on)3}$		0.070 0.081 0.11	Ω Ω Ω
Diode Forward Voltage $V_{GS} = 0\text{V}$, $I_D = 34\text{A}$ pulsed	V_{SD}		1.8	Vdc



TO-254AA



U-PKG (SMD-1)
(TO-267AB)



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TECHNICAL DATA SHEET

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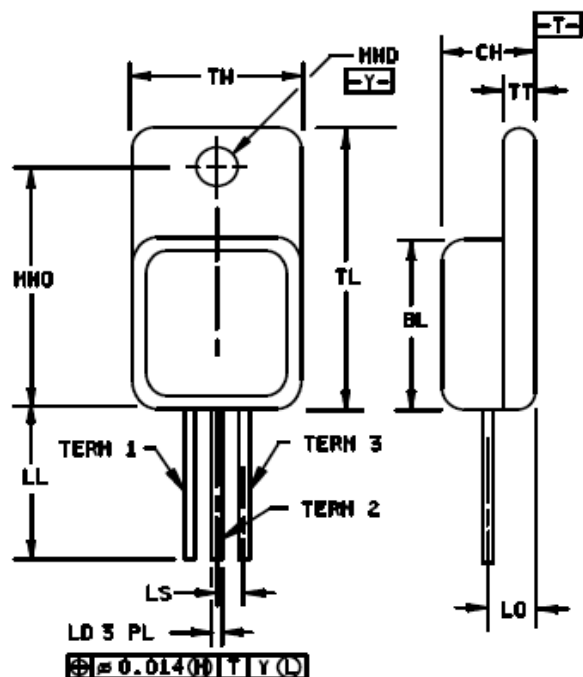
DYNAMIC CHARACTERISTICS

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}		125 22 65	nC
$V_{GS} = 10V, I_D = 34A$ $V_{DS} = 50V$				

SWITCHING CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Switching time tests: Turn-on delay time Rinse time Turn-off delay time Fall time	$t_{d(on)}$ t_r $t_{d(off)}$ t_f		35 190 170 130	ns
$I_D = 21A, V_{GS} = 10Vdc,$ Gate drive impedance = $2.35\Omega,$ $V_{DD} = 50Vdc$				
Diode Reverse Recovery Time	t_{rr}		500	ns
$di/dt \leq 100A/\mu s, V_{DD} \leq 30V,$ $I_D = 34A$				

PACKAGE DIMENSIONS



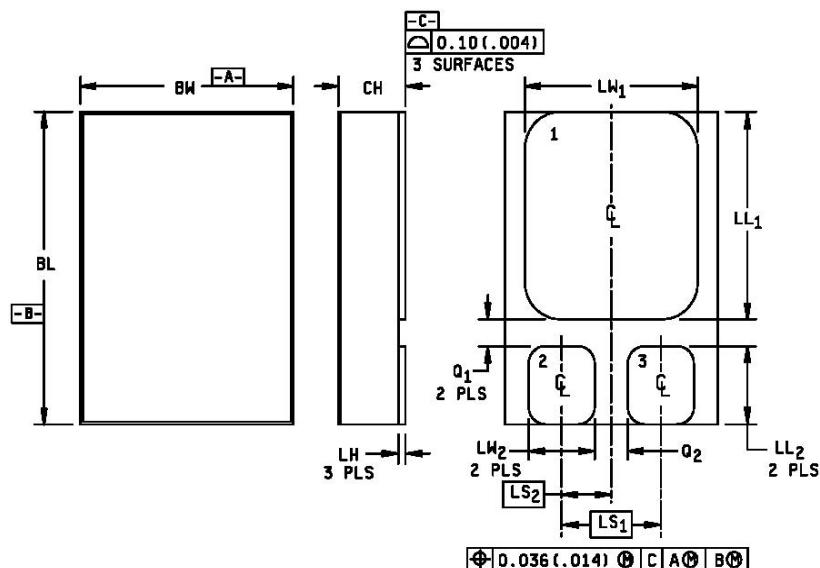
Ltr.	Dimensions				Note
	Inches		Millimeters		
	Min	Max	Min	Max	
BL	.535	.545	13.59	13.84	
CH	.249	.260	6.32	6.60	
LD	.035	.045	0.89	1.14	
LL	.510	.570	12.95	14.48	
LO	.150 BSC		3.81 BSC		
LS	.150 BSC		3.81 BSC		
MHD	.139	.149	3.53	3.78	
MHO	.665	.685	16.89	17.40	
TL	.790	.800	20.07	20.32	3, 4
TT	.040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

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Glass meniscus included in dimension D and E.
4. All terminals are isolated from the case.
5. In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 1. Physical dimensions for TO-254AA

PACKAGE DIMENSIONS



Ltr.	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.620	.630	15.75	16.00
BW	.445	.455	11.30	11.56
CH		.142		3.60
LH	.010	.020	0.26	0.50
LL ₁	.410	.420	10.41	10.67
LL ₂	.152	.162	3.86	4.11
LS ₁	.210 BSC		5.33 BSC	
LS ₂	.105 BSC		2.67 BSC	
LW ₁	.370	.380	9.40	9.65
LW ₂	.135	.145	3.43	3.68
Q ₁	.030		0.76	
Q ₂	.035		0.89	
Term 1	Drain			
Term 2	Source			
Term 3	Gate			

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for information only.
3. The lid shall be electrically isolated from the drain, gate and source.
4. In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 2. Dimensions and configuration of surface mount package outline (TO-276AB) 2N7224U, 2N7225U, 2N7227U, and 2N7228U.