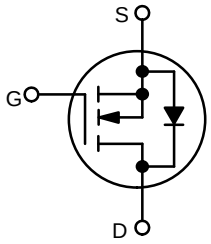
MOSFET – Power, Single, N-Channel, μCool, WDFN, 2X2 mm

30 V, 7.8 A

NTLJS4114N

$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D MAX (Note 1)
30 V	35 mΩ @ 4.5 V	7.8 A
	45 mΩ @ 2.5 V	
	55 mΩ @ 1.8 V	



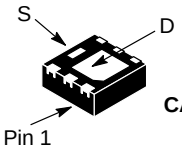
N-CHANNEL MOSFET

Features

- WDFN Package Provides Exposed Drain Pad for Excellent Thermal Conduction
- 2x2 mm Footprint Same as SC-88
- Lowest $R_{DS(on)}$ in 2x2 mm Package
- 1.8 V $R_{DS(on)}$ Rating for Operation at Low Voltage Logic Level Gate Drive
- Low Profile (< 0.8 mm) for Easy Fit in Thin Environments
- This is a Pb-Free Device

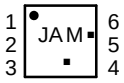
Applications

- DC-DC Conversion
- Boost Circuits for LED Backlights
- Optimized for Battery and Load Management Applications in Portable Equipment such as, Cell Phones, PDA's, Media Players, etc.
- Low Side Load Switch for Noisy Environment



WDFN6
CASE 506AP
STYLE 1

MARKING DIAGRAM



JA = Specific Device Code
M = Date Code
▪ = Pb-Free Package
(Note: Microdot may be in either location)

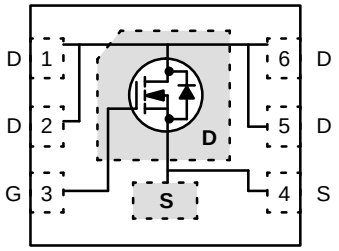
MAXIMUM RATINGS (T_J = 25 °C unless otherwise noted)

Parameter			Symbol	Value	Unit
Drain-to-Source Voltage			V_{DSS}	30	V
Gate-to-Source Voltage			V_{GS}	±12	V
Continuous Drain Current (Note 1)	Steady State	T_A = 25 °C	I_D	6.0	A
		T_A = 85 °C		4.4	
	t ≤ 5 s	T_A = 25 °C		7.8	
Power Dissipation (Note 1)	Steady State	T_A = 25 °C	P_D	1.92	W
	t ≤ 5 s			3.3	
Continuous Drain Current (Note 2)	Steady State	T_A = 25 °C	I_D	3.6	A
		T_A = 85 °C		2.6	
Power Dissipation (Note 2)		T_A = 25 °C	P_D	0.70	W
Pulsed Drain Current	t_p = 10 μs		I_{DM}	28	A
Operating Junction and Storage Temperature			T_J, T_{STG}	−55 to 150	°C
Source Current (Body Diode) (Note 2)			I_S	3.0	A
Lead Temperature for Soldering Purposes (1/8″ from case for 10 s)			T_L	260	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Surface Mounted on FR4 Board using 1 in sq pad size (Cu area = 1.127 in sq [2 oz] including traces).
2. Surface Mounted on FR4 Board using the minimum recommended pad size of 30 mm2, 2 oz Cu.

PIN CONNECTIONS



(Top View)

ORDERING INFORMATION

Device	Package	Shipping†
NTLJS4114NT1G	WDFN6 (Pb-Free)	3000/Tape & Reel
NTLJS4114NTAG	WDFN6 (Pb-Free)	3000/Tape & Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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THERMAL RESISTANCE RATINGS

Parameter	Symbol	Max	Unit
Junction-to-Ambient − Steady State (Note 3)	$R_{\theta JA}$	65	°C/W
Junction-to-Ambient − t ≤ 5 s (Note 3)	$R_{\theta JA}$	38	
Junction-to-Ambient − Steady State Min Pad (Note 4)	$R_{\theta JA}$	180	

3. Surface Mounted on FR4 Board using 1 in sq pad size (Cu area = 1.127 in sq [2 oz] including traces).
4. Surface Mounted on FR4 Board using the minimum recommended pad size (30 mm^2, 2 oz Cu).

MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 μA		30			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D = 250 μA, Ref to 25 °C			20		mV/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24 V, V_{GS} = 0 V	T_J = 25 °C			1.0	μA
			T_J = 85 °C			10	
Gate-to-Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V				±100	nA
ON CHARACTERISTICS (Note 5)							
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250 μA		0.4	0.55	1.0	V
Negative Gate Threshold Temperature Coefficient	$V_{GS(TH)}/T_J$				3.18		mV/°C
Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 2.0 A			20.3	35	mΩ
		V_{GS} = 2.5 V, I_D = 2.0 A			25.8	45	
		V_{GS} = 1.8 V, I_D = 1.8 A			35.2	55	
Forward Transconductance	g_{FS}	V_{DS} = 16 V, I_D = 2.0 A			8		S
CHARGES, CAPACITANCES AND GATE RESISTANCE							
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = 15 V			650		pF
Output Capacitance	C_{OSS}				115.5		
Reverse Transfer Capacitance	C_{RSS}				70		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 15 V, I_D = 2.0 A			8.5	13	nC
Threshold Gate Charge	$Q_{G(TH)}$				0.6		
Gate-to-Source Charge	Q_{GS}				0.9		
Gate-to-Drain Charge	Q_{GD}				2.1		
Gate Resistance	R_G				3.0		Ω
SWITCHING CHARACTERISTICS (Note 6)							
Turn-On Delay Time	$t_{d(ON)}$	V_{GS} = 4.5 V, V_{DD} = 15 V, I_D = 2.0 A, R_G = 3.0 Ω			5		ns
Rise Time	t_r				9		
Turn-Off Delay Time	$t_{d(OFF)}$				20		
Fall Time	t_f				4		
DRAIN-SOURCE DIODE CHARACTERISTICS							
Forward Recovery Voltage	V_{SD}	V_{GS} = 0 V, IS = 2.0 A	T_J = 25 °C		0.71	1.2	V
			T_J = 85 °C		0.58		
Reverse Recovery Time	t_{RR}	V_{GS} = 0 V, d_{ISD}/d_t = 100 A/μs, I_S = 1.0 A			14	35	ns
Charge Time	t_a				8.0		
Discharge Time	t_b				6.0		
Reverse Recovery Time	Q_{RR}				5.0		nC

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

5. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
6. Switching characteristics are independent of operating junction temperatures.

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TYPICAL PERFORMANCE CURVES (T_J = 25 °C unless otherwise noted)

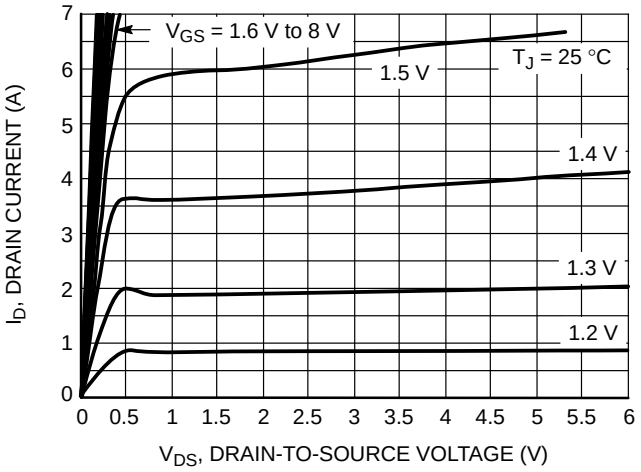


Figure 1. On-Region Characteristics

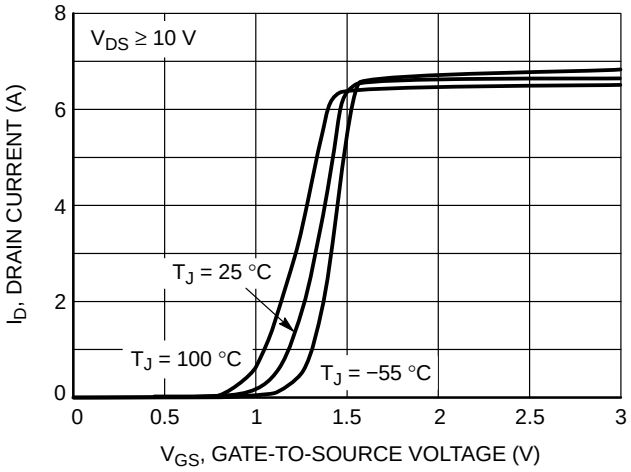


Figure 2. Transfer Characteristics

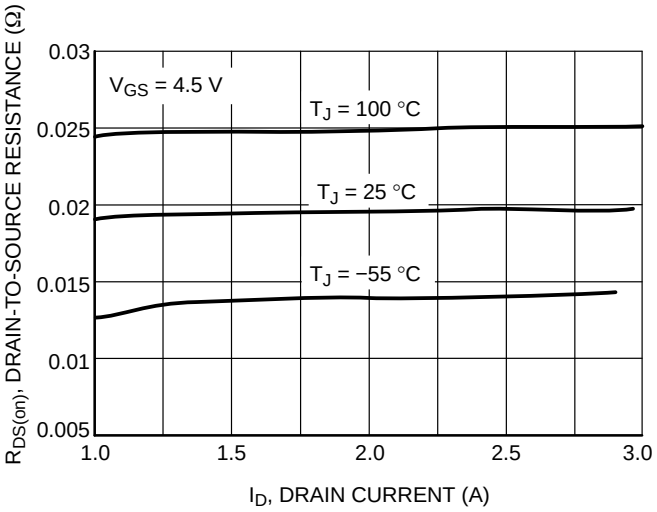


Figure 3. On-Resistance versus Drain Current

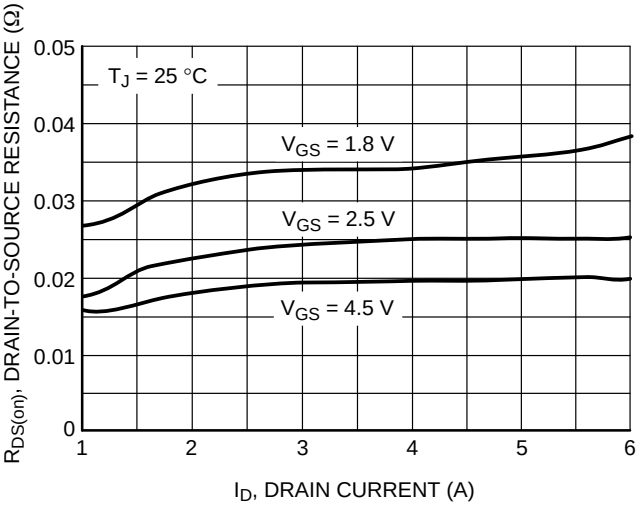


Figure 4. On-Resistance versus Drain Current and Gate Voltage

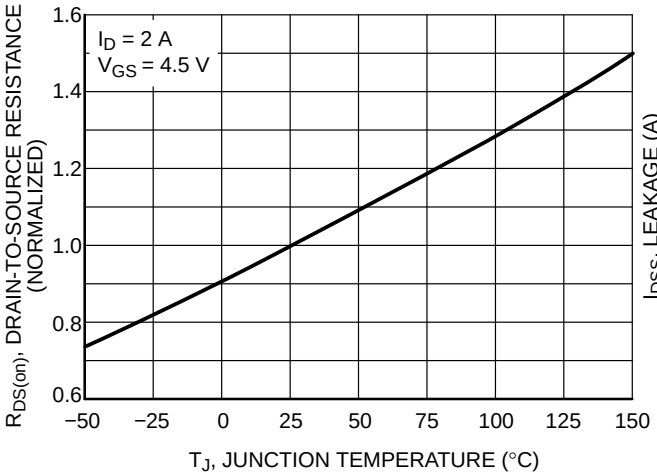


Figure 5. On-Resistance Variation with Temperature

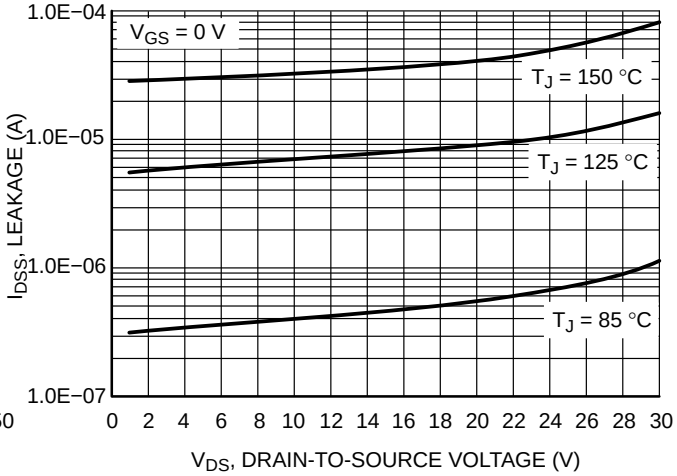


Figure 6. Drain-to-Source Leakage Current versus Voltage

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TYPICAL PERFORMANCE CURVES (T_J = 25 °C unless otherwise noted)

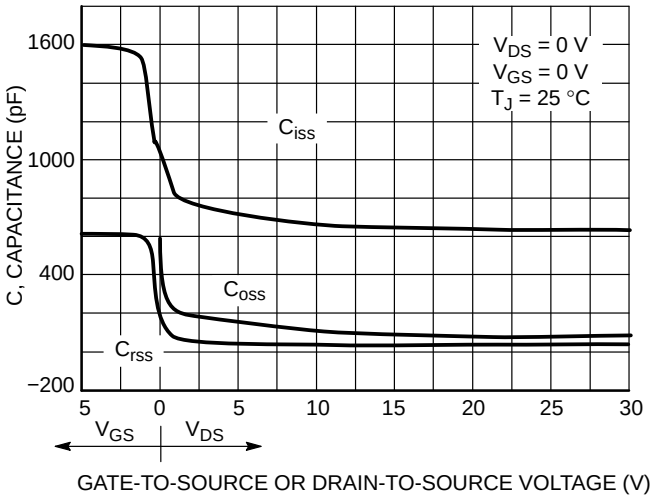


Figure 7. Capacitance Variation

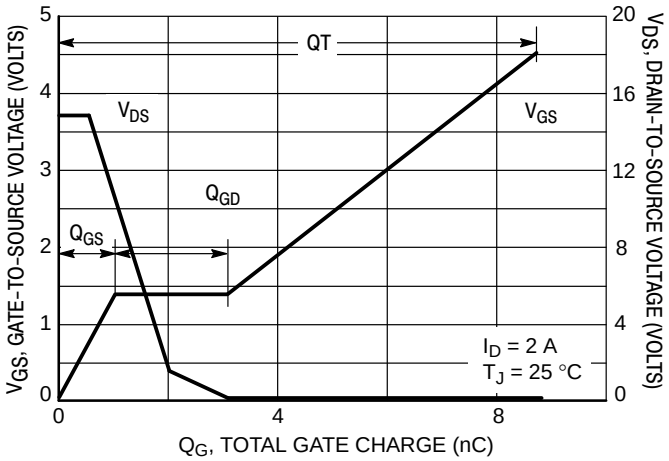


Figure 8. Gate-To-Source and Drain-To-Source Voltage versus Total Charge

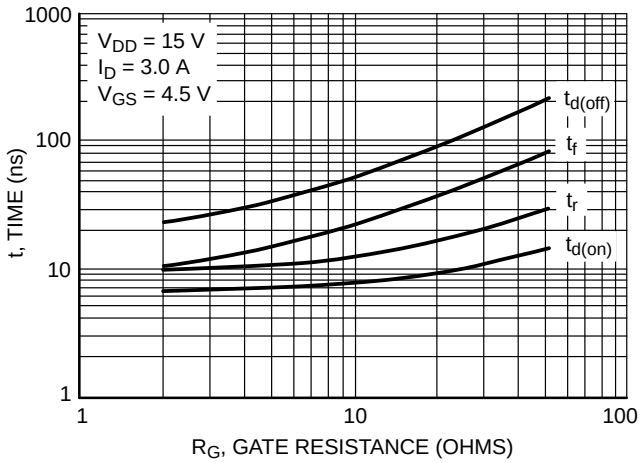


Figure 9. Resistive Switching Time Variation versus Gate Resistance

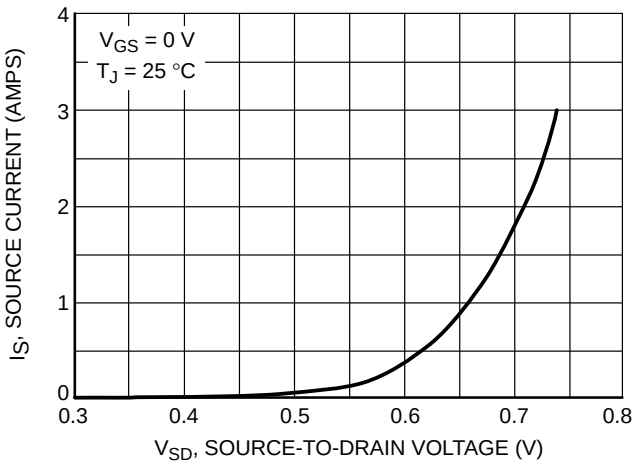


Figure 10. Diode Forward Voltage versus Current

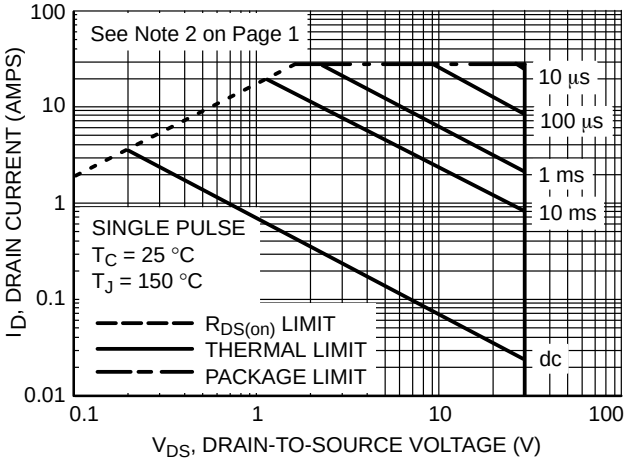


Figure 11. Maximum Rated Forward Biased Safe Operating Area

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TYPICAL PERFORMANCE CURVES (T_J = 25 °C unless otherwise noted)

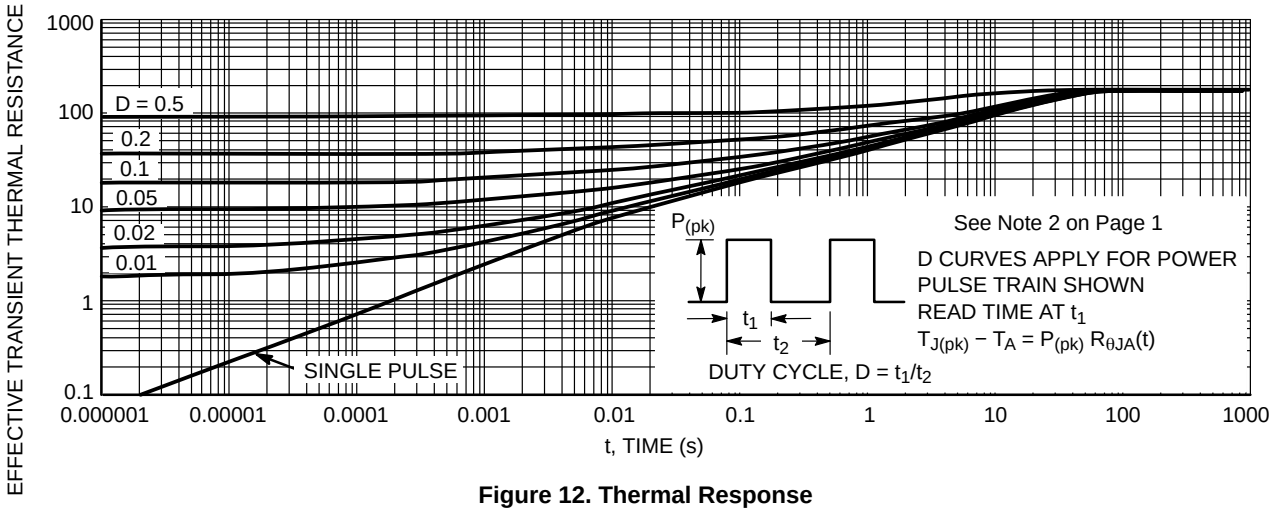


Figure 12. Thermal Response

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REVISION HISTORY

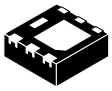
Revision	Description of Changes	Date
4	Rebranded the document to **onsemi** format.	1/27/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

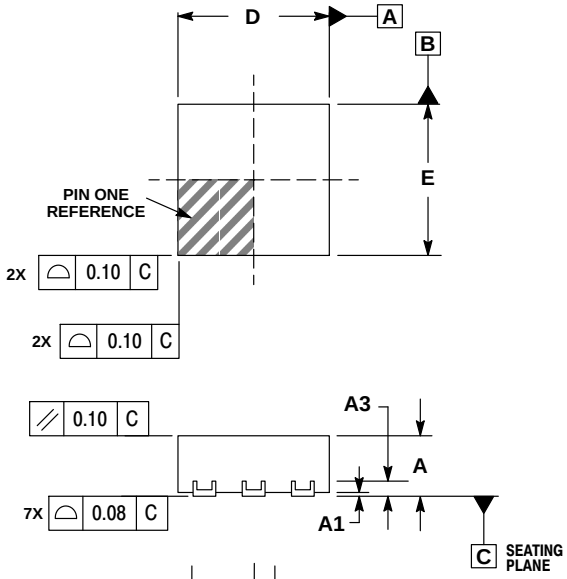
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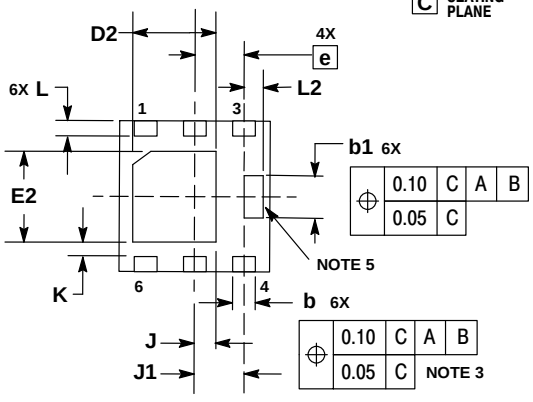
WDFN6 2x2
CASE 506AP
ISSUE B

DATE 26 APR 2006



SCALE 4:1





BOTTOM VIEW

STYLE 1:
PIN 1. DRAIN
2. DRAIN
3. GATE
4. SOURCE
5. DRAIN
6. DRAIN

STYLE 2:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. EMITTER
5. COLLECTOR
6. COLLECTOR

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.20mm FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.
1. CENTER TERMINAL LEAD IS OPTIONAL. TERMINAL LEAD IS CONNECTED TO TERMINAL LEAD # 4.
2. PINS 1, 2, 5 AND 6 ARE TIED TO THE FLAG.

	MILLIMETERS	
DIM	MIN	MAX
A	0.70	0.80
A1	0.00	0.05
A3	0.20 REF	
b	0.25	0.35
b1	0.51	0.61
D	2.00 BSC	
D2	1.00	1.20
E	2.00 BSC	
E2	1.10	1.30
e	0.65 BSC	
K	0.15 REF	
L	0.20	0.30
L2	0.20	0.30
J	0.27 REF	
J1	0.65 REF	

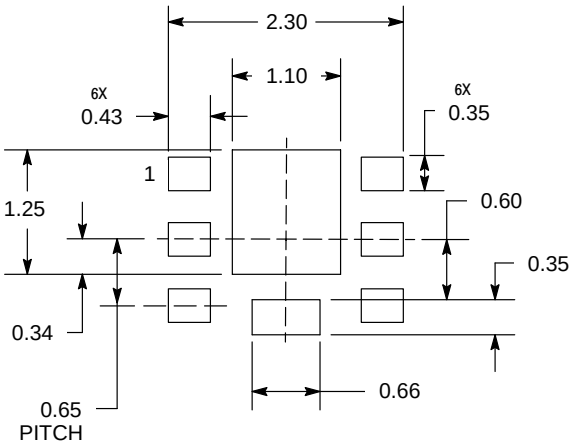
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

SOLDERMASK DEFINED MOUNTING FOOTPRINT



DIMENSIONS: MILLIMETERS

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DESCRIPTION:	**6 PIN WDFN 2X2, 0.65P**	**PAGE 1 OF 1**

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