



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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NSS40200UW6T1G, NSV40200UW6T1G

40 V, 2.0 A, Low $V_{CE(sat)}$ PNP Transistor

ON Semiconductor's e²PowerEdge family of low $V_{CE(sat)}$ transistors are miniature surface mount devices featuring ultra low saturation voltage ($V_{CE(sat)}$) and high current gain capability. These are designed for use in low voltage, high speed switching applications where affordable efficient energy control is important.

Typical applications are DC-DC converters and power management in portable and battery powered products such as cellular and cordless phones, PDAs, computers, printers, digital cameras and MP3 players. Other applications are low voltage motor controls in mass storage products such as disc drives and tape drives. In the automotive industry they can be used in air bag deployment and in the instrument cluster. The high current gain allows e²PowerEdge devices to be driven directly from PMU's control outputs, and the Linear Gain (Beta) makes them ideal components in analog amplifiers.

Features

- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	-40	Vdc
Collector-Base Voltage	V_{CBO}	-40	Vdc
Emitter-Base Voltage	V_{EBO}	-7.0	Vdc
Collector Current - Continuous	I_C	-2.0	Adc
Collector Current - Peak	I_{CM}	-4.0	A
Electrostatic Discharge	ESD	HBM Class 3B MM Class C	

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D (Note 1)	875 7.0	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$ (Note 1)	143	$^\circ\text{C}/\text{W}$
Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D (Note 2)	1.5 11.8	W mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$ (Note 2)	85	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Lead #1	$R_{\theta JL}$ (Note 2)	23	$^\circ\text{C}/\text{W}$
Total Device Dissipation (Single Pulse < 10 sec)	$P_{D\text{single}}$ (Notes 2 & 3)	3.0	W
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

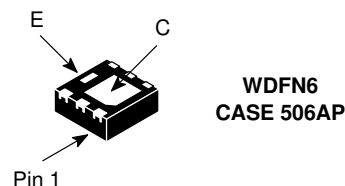
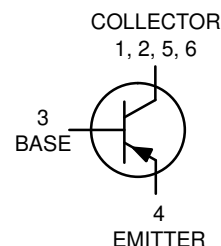
1. FR-4 @ 100 mm², 1 oz copper traces.
2. FR-4 @ 500 mm², 1 oz copper traces.
3. Thermal response.



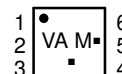
ON Semiconductor®

<http://onsemi.com>

-40 VOLTS
2.0 AMPS
PNP LOW $V_{CE(sat)}$ TRANSISTOR
EQUIVALENT $R_{DS(on)}$ 100 m Ω



MARKING DIAGRAM



VA = Specific Device Code
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
NSS40200UW6T1G	WDFN6 (Pb-Free)	3000/ Tape & Reel
NSV40200UW6T1G	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 Specifications Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typical	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I _C = –10 mA, I _B = 0)	V _{(BR)CEO}	–40	–	–	Vdc
Collector–Base Breakdown Voltage (I _C = –0.1 mA, I _E = 0)	V _{(BR)CBO}	–40	–	–	Vdc
Emitter–Base Breakdown Voltage (I _E = –0.1 mA, I _C = 0)	V _{(BR)EBO}	–7.0	–	–	Vdc
Collector Cutoff Current (V _{CB} = –40 Vdc, I _E = 0)	I _{CBO}	–	–	–0.1	μA _{dc}
Emitter Cutoff Current (V _{EB} = –7.0 Vdc)	I _{EBO}	–	–	–0.1	μA _{dc}

ON CHARACTERISTICS

DC Current Gain (Note 4) (I _C = –10 mA, V _{CE} = –2.0 V) (I _C = –500 mA, V _{CE} = –2.0 V) (I _C = –1.0 A, V _{CE} = –2.0 V) (I _C = –2.0 A, V _{CE} = –2.0 V)	h _{FE}	150 150 150 150	– – – –	– – – –	
Collector–Emitter Saturation Voltage (Note 4) (I _C = –0.1 A, I _B = –0.010 A) (Note 5) (I _C = –1.0 A, I _B = –0.100 A) (I _C = –1.0 A, I _B = –0.010 A) (I _C = –2.0 A, I _B = –0.020 A)	V _{CE(sat)}	– – – –	– –0.100 – –	–0.020 –0.120 –0.200 –0.300	V
Base–Emitter Saturation Voltage (Note 4) (I _C = –1.0 A, I _B = –0.01 A)	V _{BE(sat)}	–	–0.76	–0.900	V
Base–Emitter Turn–on Voltage (Note 4) (I _C = –2.0 A, V _{CE} = –3.0 V)	V _{BE(on)}	–	–0.80	–0.900	V
Cutoff Frequency (I _C = –100 mA, V _{CE} = –5.0 V, f = 100 MHz)	f _T	140	–	–	MHz
Input Capacitance (V _{EB} = –0.5 V, f = 1.0 MHz)	C _{ibo}	–		500	pF
Output Capacitance (V _{CB} = –3.0 V, f = 1.0 MHz)	C _{obo}	–		100	pF

SWITCHING CHARACTERISTICS

Delay (V _{CC} = 30 V, I _C = 750 mA, I _{B1} = 15 mA)	t _d	–	–	70	ns
Rise (V _{CC} = 30 V, I _C = 750 mA, I _{B1} = 15 mA)	t _r	–	–	150	ns
Storage (V _{CC} = 30 V, I _C = 750 mA, I _{B1} = 15 mA)	t _s	–	–	525	ns
Fall (V _{CC} = 30 V, I _C = 750 mA, I _{B1} = 15 mA)	t _f	–	–	155	ns

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.

4. Pulsed Condition: Pulse Width = 300 μsec, Duty Cycle ≤ 2%.
5. Guaranteed by design but not tested.

TYPICAL CHARACTERISTICS

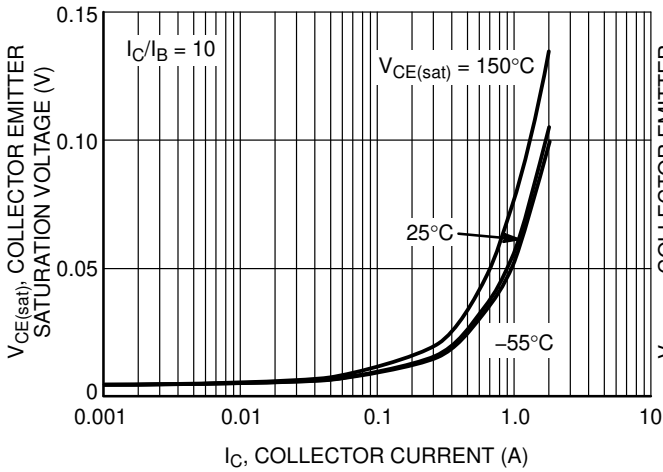


Figure 1. Collector Emitter Saturation Voltage vs. Collector Current

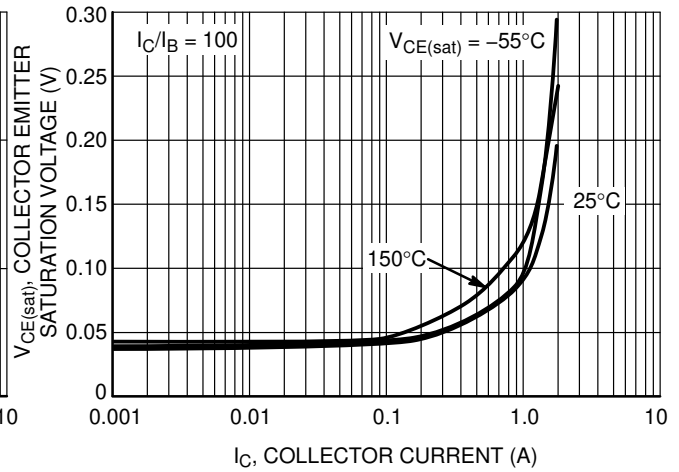


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

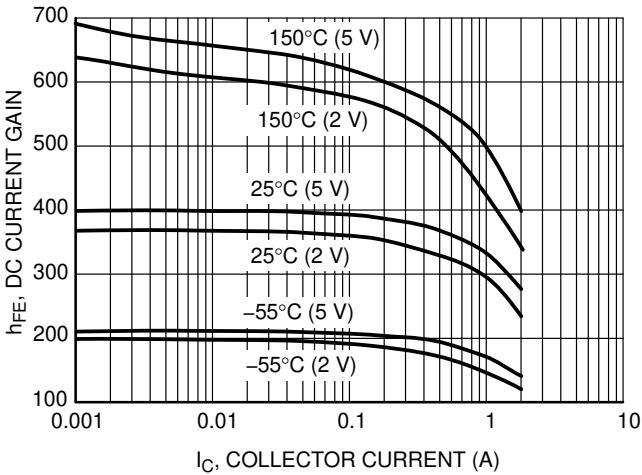


Figure 3. DC Current Gain vs. Collector Current

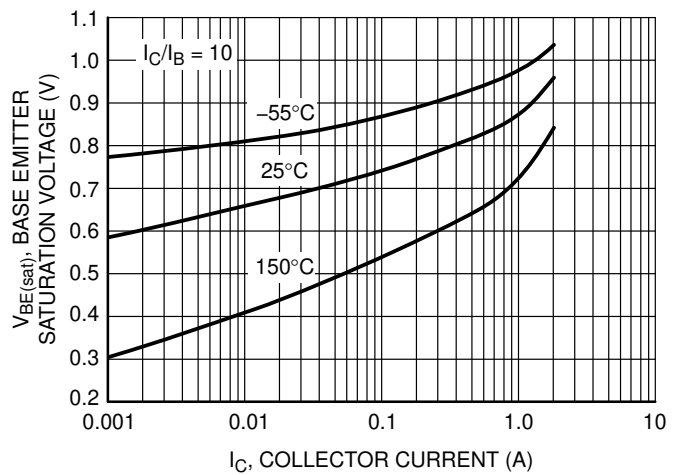


Figure 4. Base Emitter Saturation Voltage vs. Collector Current

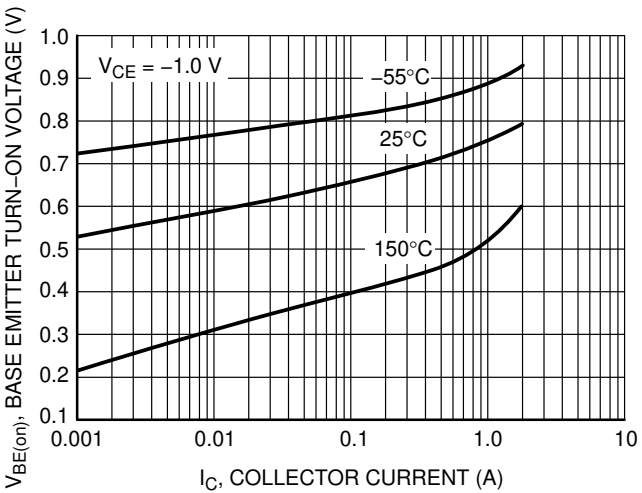


Figure 5. Base Emitter Turn-On Voltage vs. Collector Current

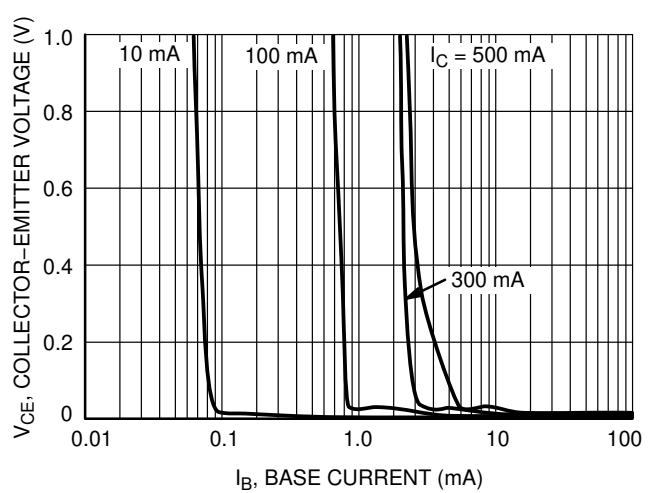


Figure 6. Saturation Region

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TYPICAL CHARACTERISTICS

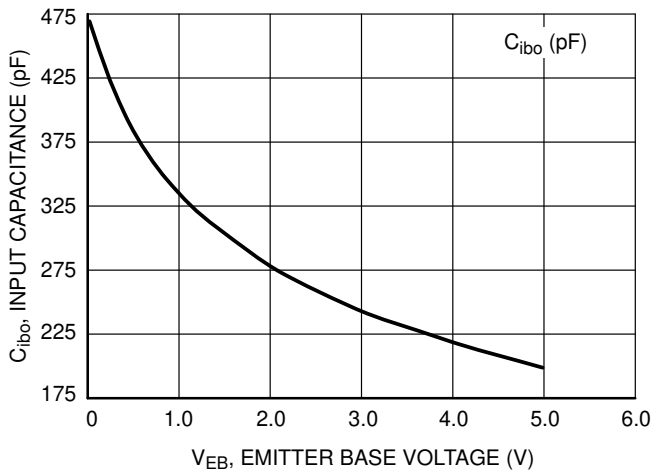


Figure 7. Input Capacitance

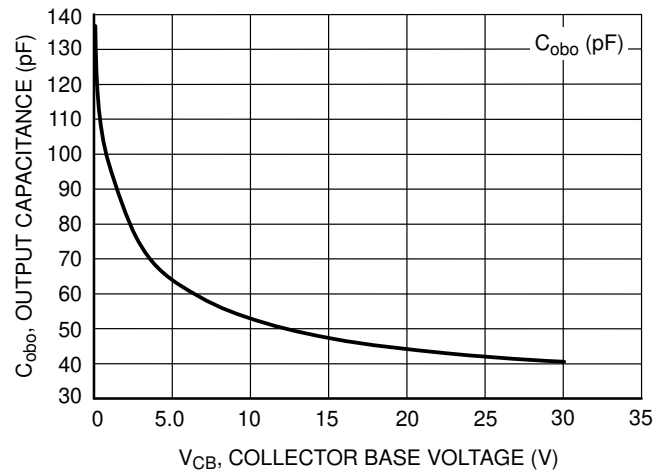


Figure 8. Output Capacitance

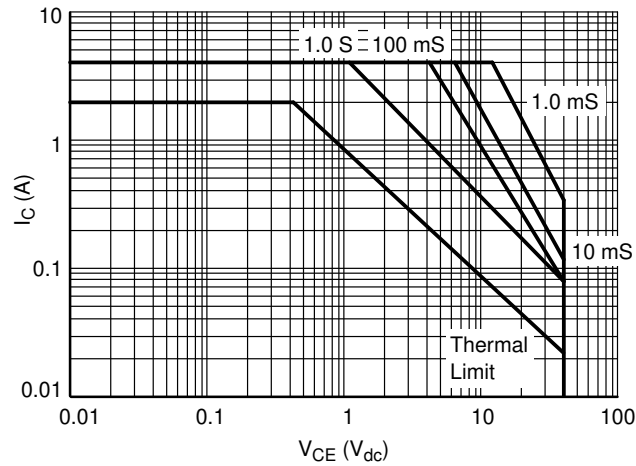
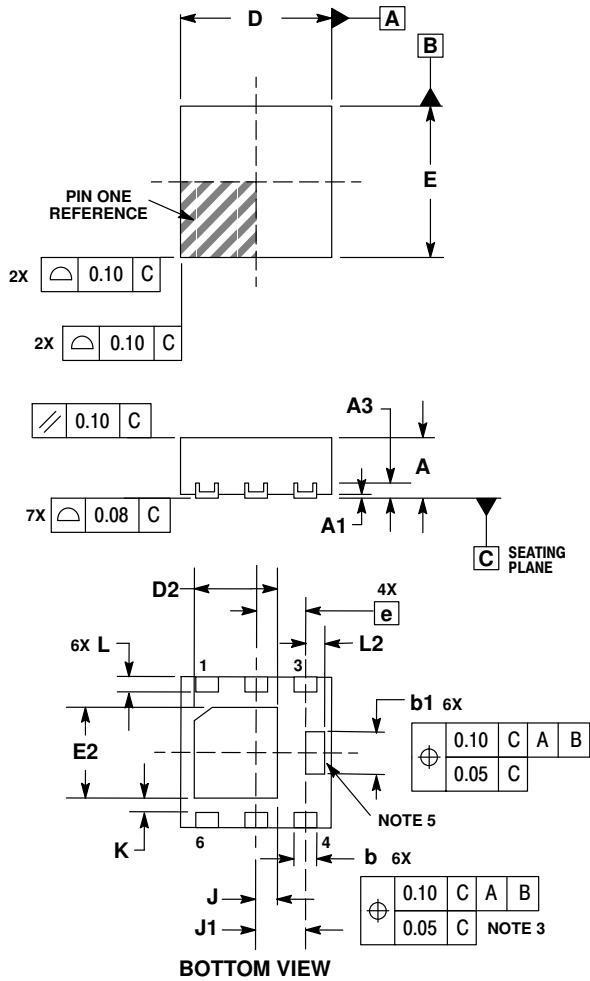


Figure 9. PNP Safe Operating Area

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PACKAGE DIMENSIONS

WDFN6 2x2
CASE 506AP
ISSUE B

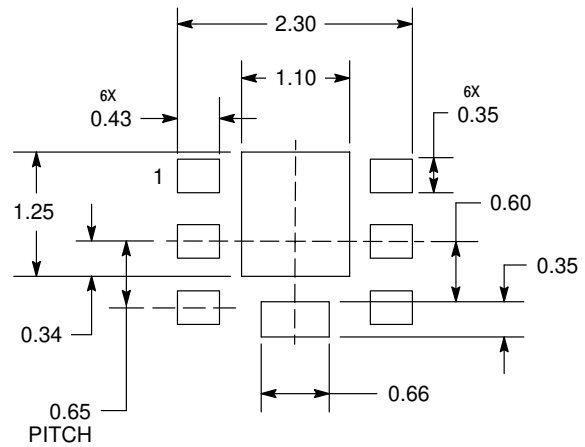


NOTES:

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.
5. CENTER TERMINAL LEAD IS OPTIONAL. TERMINAL LEAD IS CONNECTED TO TERMINAL LEAD # 4.
6. PINS 1, 2, 5 AND 6 ARE TIED TO THE FLAG.

DIM	MILLIMETERS	
	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	

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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