MPSW42

One Watt High Voltage Transistor

NPN Silicon

Features

• Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V _{CEO}	300	Vdc
Collector - Base Voltage	V _{CBO}	300	Vdc
Emitter - Base Voltage	V _{EBO}	6.0	Vdc
Collector Current – Continuous	Ic	500	mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	1.0 8.0	W mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	2.5 20	W mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

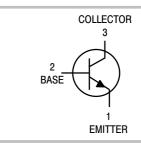
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	50	°C/W

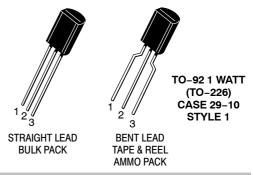
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



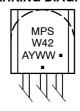
ON Semiconductor®

http://onsemi.com





MARKING DIAGRAM



MPSW42 = Device Code A = Assembly Location

Y = Year
WW = Work Week
■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
MPSW42	TO-92	5000 Units/Box
MPSW42G	TO-92 (Pb-Free)	5000 Units/Box
MPSW42RLRA	TO-92	2000/Tape & Reel
MPSW42RLRAG	TO-92 (Pb-Free)	2000/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.

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

MPSW42

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector – Emitter Breakdown Voltage (Note 1) $(I_C = 1.0 \text{ mAdc}, I_B = 0)$	V _(BR) CEO	300	_	Vdc
Collector–Base Breakdown Voltage $(I_C = 100 \mu Adc, I_E = 0)$	V _{(BR)CBO}	300	_	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu Adc, I_C = 0$)	V _{(BR)EBO}	6.0	_	Vdc
Collector Cutoff Current (V _{CB} = 200 Vdc, I _E = 0)	I _{CBO}	-	0.1	μAdc
Emitter Cutoff Current $(V_{EB} = 6.0 \text{ Vdc}, I_C = 0)$	I _{EBO}	-	0.1	μAdc
ON CHARACTERISTICS	•			
DC Current Gain	h _{FE}	25 40 40	- - -	-
Collector-Emitter Saturation Voltage (I _C = 20 mAdc, I _B = 2.0 mAdc)	V _{CE(sat)}	-	0.5	Vdc
Base-Emitter Saturation Voltage (I _C = 20 mAdc, I _B = 2.0 mAdc)	V _{BE(sat)}	-	0.9	Vdc
SMALL-SIGNAL CHARACTERISTICS	•			
Current-Gain - Bandwidth Product (I _C = 10 mAdc, V _{CE} = 20 Vdc, f = 20 MHz)	f _T	50	_	MHz
Collector Capacitance (V _{CB} = 20 Vdc, I _E = 0, f = 1.0 MHz)	C _{cb}	-	3.0	pF

^{1.} Pulse Test: Pulse Width $\leq 300 \,\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

MPSW42

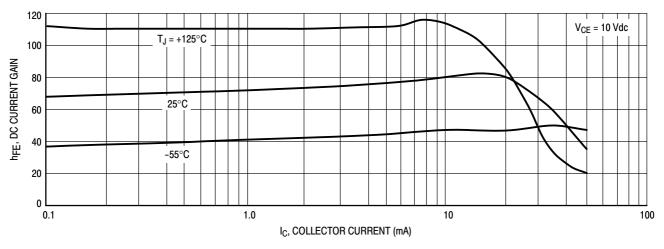


Figure 1. DC Current Gain

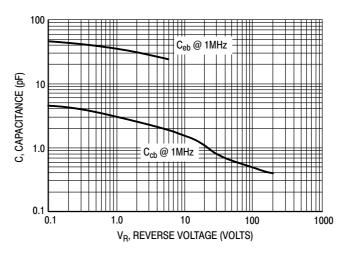


Figure 2. Capacitance

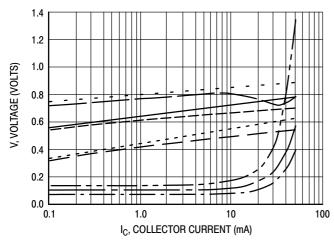
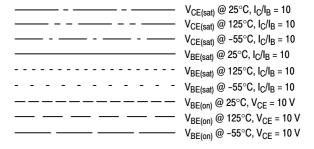
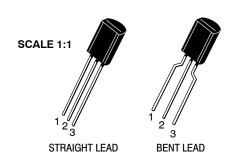


Figure 3. "ON" Voltages



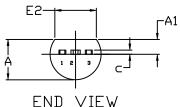


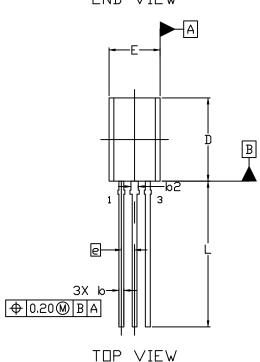


TO-92 (TO-226) 1 WATT CASE 29-10 ISSUE D

DATE 05 MAR 2021

STRAIGHT LEAD





NOTES:

- DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
- CONTROLLING DIMENSION: MILLIMETERS
- 3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR GATE PROTRUSIONS.
- 4. DIMENSION 6 AND 62 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 0.20. DIMENSION 62 LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.

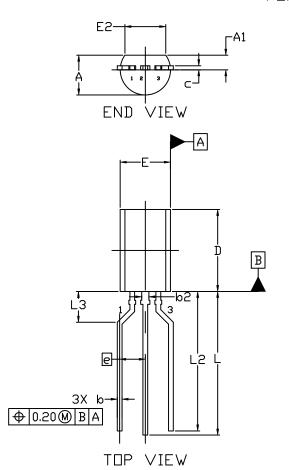
	MILLIMETERS						
DIM	MIN.	N□M.	MAX.				
Α	3.75	3.90	4.05				
A1	1.28	1.43	1.58				
b	0.38	0.465	0.55				
b2	0.62	0.70	0.78				
c	0.35	0.40	0.45				
D	7.85	8.00	8.15				
E	4.75	4.90	5.05				
E2	3.90						
е	1.27 BSC						
L	13.80	14.00	14.20				

STYLES AND MARKING ON PAGE 3

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FORMED LEAD



NOTES:

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- 2. CONTROLLING DIMENSION: MILLIMETERS
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Ε	4.75	4.90	5.05			
E2	3.90					
e		2.50 BSC				
L	13.80	14.00	14.20			
L2	13.20	13.60	14.00			
L3	3.00 REF					

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CASE 29-10 ISSUE D

DATE 05 MAR 2021

2.	EMITTER BASE COLLECTOR		BASE EMITTER COLLECTOR		ANODE ANODE CATHODE		CATHODE CATHODE ANODE		DRAIN SOURCE GATE
	GATE	STYLE 7: PIN 1. 2. 3.	SOURCE DRAIN	STYLE 8: PIN 1. 2. 3.	DRAIN GATE	2.	BASE 1	2.	CATHODE GATE ANODE
2.	ANODE CATHODE & ANODE	PIN 1. 2.	MAIN TERMINAL 1	PIN 1. 2.	ANODE 1 GATE	2.	EMITTER	2.	ANODE 1 CATHODE ANODE 2
2.	ANODE GATE CATHODE	STYLE 17: PIN 1. 2. 3.	COLLECTOR BASE EMITTER		ANODE CATHODE NOT CONNECTED		GATE ANODE CATHODE	2.	NOT CONNECTED CATHODE ANODE
2.		2.	SOURCE GATE DRAIN		GATE SOURCE DRAIN	PIN 1. 2.	EMITTER	2.	MT 1
	V _{CC}			PIN 1. 2.		PIN 1. 2.	NOT CONNECTED ANODE CATHODE		
	GATE	STYLE 32: PIN 1. 2. 3.	BASE COLLECTOR EMITTER	2.	RETURN INPUT OUTPUT	PIN 1. 2.	INPUT GROUND LOGIC		

GENERIC MARKING DIAGRAM*



XXXX = Specific Device Code

A = Assembly Location

L = Wafer Lot

Y = Year

W = Work Week

■ = Pb-Free Package

(Note: Microdot may be in either location)

*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. Some products may not follow the Generic Marking.

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