Under Voltage Sense/Reset Controllers

Mfr.'s Type		Standard Power Supply Supported (V)	Typical Threshold Voltage (V)	Typical Hysteresis Voltage (V)	Minimum Output Sink Current (mA)	Power Supply Input Voltage Range (V)	Maximum Quiescent Input Current	T_A (°C)
Case 29/TO-92	Case 751/SO-8							
MC34064P-5	MC34064D-5	5.0 ±5%	4.6	0.02	10	1.0 to 10	500 µA @ V_{in}=5.0 V	0 to +70
MC33064P-5	MC33064D-5	5.0 ±5%	4.6	0.02	10	1.0 to 10	500 µA @ V_{in}=5.0 V	–40 to +85
MC34164P-5	MC34164D-5	5.0 ±10%	4.3	0.09	7	1.0 to 12	20 µA @ V_{in}=5.0 V	0 to +70
MC33164P-5	MC33164D-5	5.0 ±10%	4.3	0.09	7	1.0 to 12	20 µA @ V_{in}=5.0 V	–40 to +85

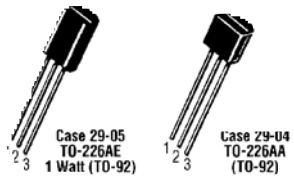
Precision Low Voltage References

Mfr.'s Type				Vout (V) Typ.	IO (mA) Max.	Vout/T (ppm/°C) Max.	Regline (mV) Max.	Regload (mV) Max.	Temperature Range (°C)
Case 29/TO-92	Case 751/SO-8	8 Lead PDIP	8 Lead SOIC						
LM385BZ-1.2	—	—	—	1.235 ±12 mV	20	80 Typ.	Note 1	1*	0 to +70
LM285Z-1.2	—	—	—	1.235 ±25 mV	20	80 Typ.	Note 1	1*	–40 to +85
LM385BZ-2.5	—	—	—	2.500 ±38 mV	20	80 Typ.	Note 1	2*	0 to +70
LM285Z-2.5	—	—	—	2.500 ±75 mV	20	80 Typ.	Note 1	2*	–40 to +85
—	MC1403D	—	—	2.500 ±25 mV	10	40	Note 2	10**	0 to +70
TL431CLP	—	—	—	2.500 to 37	100	50 Typ.	Note 3	Note 3	0 to +70
TL431ACLP	—	—	—	2.500 to 37	100	50 Typ.	Note 3	Note 3	0 to +70
TL431ILP	—	TL431IP	TL431ID	2.500 to 37	100	50 Typ.	Note 3	Note 3	0 to +70
TL431AILP	—	—	—	2.550 to 37	100	50 Typ.	Note 3	Note 3	0 to +70

Note 1: Micropower Reference Diode Dynamic Impedance (z) < 1.0 Ohm at IR = 100 µA. Note 2: 4.5 V < Vin <15 V / 15 V < Vin < 40 V. Note 3: Shunt Reference Dynamic Impedance (z) < 0.5 Ohm. *10 µA < IR < 1.0mA. **20 µA < IR < 1.0 mA. **0 mA < IL < 10 mA.

Bipolar Transistors

Plastic-Encapsulated Transistors



1=Emitter; 2=Base; 3=Collector

ON Semiconductor's Small Signal TO-226 plastic transistors encompass hundreds of devices with a wide variety of characteristics for general-purpose, amplifier and switching applications. The popular high-volume package combines proven reliability, performance, economy and convenience to provide the perfect solution for industrial and consumer design problems. All devices are laser marked for ease of identification and shipped in antistatic containers, as part of ON Semiconductor's ongoing practice of maintaining the highest standards of quality and reliability.

Plastic-Encapsulated General-Purpose Transistors (Case 29-04 — TO-226AA (TO-92)
These general-purpose transistors are designed for small-signal amplification from dc to low ratio frequencies. They are also useful as oscillators and general-purpose switches. Complementary devices shown where available.

Mfr.'s Type		$V_{(BR)CEO}$ (V) Min.	f_T @ I_C		I_C (mA) Max.	h_{FE} @ I_C			NF dB Max.	Style
NPN	PNP		(MHz) Min.	(mA)		Min.	Max.	(mA)		
MPS8099	—	80	150	10	500	100	300	1.0	—	1
MPSA06	MPSA56	80	100	10	500	100	—	100.0	—	1
—	MPS2907A	60	200	50	600	100	300	150.0	—	1
MPS2222A	—	40	300	20	600	100	300	150.0	—	1
2N4401	2N4403	40	200	20	600	100	300	150.0	—	1
MPS6602	MPS6652	40	100	50	1000	50	—	500.0	—	1
2N3904	2N3906	40	250	10	200	100	300	10.0	5.0	1
MPSA05	MPSA55	60	100	10	500	100	—	10.0	—	1
MPSA20	—	40	125	50	100	40	400	5.0	—	1

Plastic-Encapsulated General Purpose Transistors (Case 29-05 — TO-226AE (1-Watt TO-92)

Mfr.'s Type	$V_{(BR)CEO}$ (V) Min.	f_T @ I_C		I_C (A) Max.	h_{FE} @ I_C			$V_{CE(sat)}$ @ I_C and I_B			Style
NPN		(MHz) Min.	(mA)		Min.	Max.	(mA)	(V) Max.	(mA)	(mA)	
MPSW06	80	50	200	0.5	80	—	50	0.4	250	10	1

Plastic-Encapsulated Low-Noise and Good h_{FE} Linearity (Case 29-04 — TO-226AA (TO-92))
These devices are designed to use on applications where good h_{FE} linearity and low-noise characteristics are required: Instrumentation, hi-fi preamplifier.

Mfr.'s Type		$V_{(BR)CEO}$ (V)	h_{FE} @ I_C			V_T[4] (mV) Typ.	NF[5] dB Max.	f_T (MHz) Typ.	Style
NPN	PNP		Min.	Max.	(mA)				
—	2N5087	50	250	800	0.1	—	2.0	40[2]	1
MPSA18	—	45	500	—	1.0	6.5[1]	—	160	1

[1]Typical. [2]Min.

Plastic-Encapsulated Darlington Transistors (Case 29-05 — TO-226AE (1-Watt TO-92))
Darlington amplifiers are cascade transistors used in applications requiring very high-gain and input impedance. These devices have monolithic construction.

Mfr.'s Type		$V_{(BR)CEO}$ (V)	f_T @ I_C		I_C Max.	h_{FE} @ I_C			$V_{CE(sat)}$ @ I_C and I_B			Style
NPN	PNP		(MHz) Min.	(mA)		Min.	Max.	(mA)	(V) Max.	(mA)	(mA)	
MPSW45A	—	50	100	200	1000	25 K	150 K	200	1.5	1000	2.0	1

Plastic-Encapsulated Darlington Transistors (Case 29-04 — TO-226AA (TO-92))

Mfr.'s Type		$V_{(BR)CEO}$ (V)	f_T @ I_C		I_C Max.	h_{FE} @ I_C			$V_{CE(sat)}$ @ I_C and I_B			Style
NPN	PNP		(MHz) Min.	(mA)		Min.	Max.	(mA)	(V) Max.	(mA)	(mA)	
MPSA29	—	100	125	10	500	10 K	—	100	1.5	100	0.1	1
MPSA14	MPSA64	30	125	10	500	20 K	—	100	1.5	100	0.1	1
MPSA27	—	60	200	10	500	10 K	—	100	1.5	100	0.1	1
—	MPSA77	60	200	10	500	10 K	—	100	1.5	100	0.1	1
MPSA13	—	30	125	10	500	20 K	—	100	1.5	100	0.1	1

Plastic-Encapsulated High-Current Transistors (Case 29-05 — TO-226AE (1-Watt TO-92))
The following table is a listing of devices that are capable of handling a higher current range for small-signal transistors.

Mfr.'s Type		$V_{(BR)CEO}$ (V) Min.	f_T @ I_C		I_C (mA) Max.	h_{FE} @ I_C			$V_{CE(sat)}$ @ I_C and I_B			Style
NPN	PNP		(MHz) Min.	(mA)		Min.	Max.	(mA)	(V) Max.	(mA)	(mA)	
MPSW01A	MPSW51A	40	50	50	1000	50	—	1000	0.5/0.7	1000	100	1

Plastic-Encapsulated High-Current Transistors (Case 29-04 — TO-226AA (TO-92))

MPS651	MPS751	60	75	50	2000	75	—	1000	0.5	2000	200	1

Plastic-Encapsulated High-Voltage Amplifier Transistors (Case 29-05 — TO-226AE (1-watt TO-92) — PNP)
These high-voltage transistors are designed for driving neon bulbs and indicator tubes, for direct line operation, and for other applications requiring high-voltage capability at relatively low collector current. These devices are listed in order of decreasing breakdown voltage ($V_{(BR)CEO}$).

Mfr.'s Type	$V_{(BR)CEO}$ (V) Min.	I_C (A) Max.	h_{FE} @ I_C		$V_{CE(sat)}$ @ I_C and I_B			f_T @ I_C		Style
			Min.	(mA)	(V) Max.	(mA)	(mA)	(MHz) Min.	(mA)	
MPSW92	300	0.5	25	30	0.50	20	2.0	50	10	1

Plastic-Encapsulated High-Voltage Amplifier Transistors (Case 29-04 — TO-226AA (TO-92) — NPN)

Mfr.'s Type	$V_{(BR)CEO}$ (V) Min.	I_C (A) Max.	h_{FE} @ I_C		$V_{CE(sat)}$ @ I_C and I_B			f_T @ I_C		Style
			Min.	(mA)	(V) Max.	(mA)	(mA)	(MHz) Min.	(mA)	
MPSA44	400	0.3	40	100	0.75	50	5.0	—	—	1
2N6517	350	0.5	30	30	0.30	10	1.0	40	10	1
MPSA42	300	0.5	40	10	0.50	20	2.0	50	10	1
2N5551	160	0.6	80	10	0.15	10	1.0	100	10	1