

Conversion of TO-105/TO-106 to TO-92

National has chosen to no longer produce the TO-105/106 plastic transistor line. The decision to drop this line was based on two major factors: cost and performance.

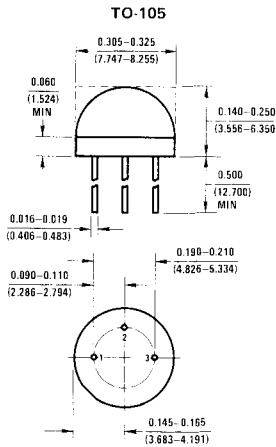
The TO-92 is the most advanced transistor offered today. With its automated assembly, it has the lowest potential cost. By contrast, the TO-105/106 is a hand-assembled product and its cost is tied to ever-increasing labor costs. One can save 20% to 50% by using TO-92 equivalents.

Our TO-92 is encapsulated in "Epoxy B" and has a copper lead frame. This is *the* superior TO-92 available today. As compared with TO-105/106, our TO-92 has better than twice the power dissipation of either package.

We have done several things in order to make this conversion as easy as possible. We are offering a

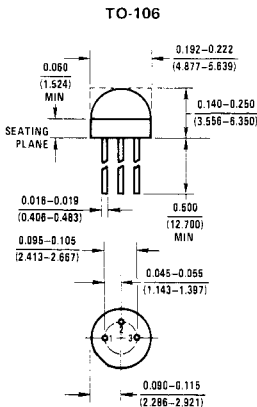
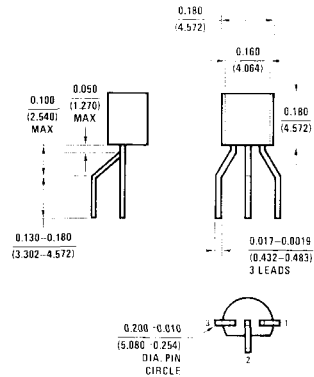
series on "PN" ("PN" and "J" in FETs) part numbers that have exactly the same number as the original part; i.e., 2N3565 becomes a PN3565. These PN types use the same chip and are screened to the same electrical specification as the original part. The original parts have a pin circle, TO-106 = TO-18 and TO-105 = TO-5, so we will supply TO-92 lead formed to the appropriate configuration at no extra charge. If you enter an order to the old part number, our computer will automatically convert it to the correct PN number *with* the correct lead form; i.e., 2N3565 becomes PN3565-18. In the case of some of the less popular types, we have converted to the nearest part type using the same chip. Please use the conversion chart on the next page as a guide.

It is our intent to service our customers with the highest quality and most cost-effective product available.



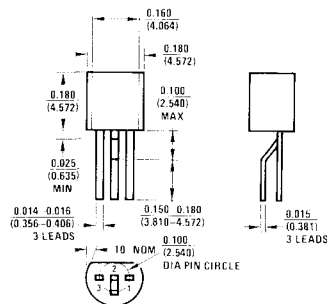
PIN	T
1	E
2	B
3	C

TO-92 Device to TO-5 Pin Circle



PIN	FET	T
1	S	E
2	D	B
3	G	C

TO-92 Device to TO-18 Pin Circle



Conversion of TO-105/TO-106 to TO-92 (Continued)

Conversion of TO-105/TO-106 to TO-92

Bipolar

TO-105/106	TO-92	TO-105/106	TO-92	TO-105/106	TO-92
EN2222	PN2222-18	2N3692	PN3692-18	2N4965	2N5086-18
EN2369A	PN2369A-18	2N3693	MPS3693-18	2N4966	2N5209-18
EN2484	PN2484-18	2N3694	PN3694-18	2N4967	2N5210-18
3N2907	PN2907-18	2N4121	PN4121-18	2N4968	2N5209-18
EN918	PN918-18	2N4122	PN4122-18	2N4969	PN2221-18
EN930	PN930-18	2N4140	PN4140-18	2N4970	PN2222-18
SM3904	2N3904-18	2N4141	PN4141-18	2N4971	PN2906-18
SM3906	2N3906-18	2N4142	PN4142-18	2N4972	PN2907-18
2N3563	PN3563-18	2N4143	PN4143-18	2N5127	PN5127-18
2N3564	PN3564-18	2N4248	PN4248-18	2N5128	PN5128-5
2N3565	PN3565-18	2N4249	PN4249-18	2N5129	PN5129-18
2N3566	PN3566-5	2N4250	PN4250-18	2N5130	PN5130-18
2N3567	PN3567-5	2N4250A	PN4250A-18	2N5131	PN5131-18
2N3568	PN3568-5	2N4258	PN4258-18	2N5132	PN5132-18
2N3569	PN3569-5	2N4258A	PN4258A-18	2N5133	PN5133-18
2N3638	PN3638-5	2N4274	PN4274-18	2N5134	PN5134-18
2N3638A	PN3638A-5	2N4275	PN4275-18	2N5135	PN5135-18
2N3639	PN3639-18	2N4354	PN4354-5	2N5136	PN5136-5
2N3640	PN3640-18	2N4355	PN4355-5	2N5137	PN5137-18
2N3641	PN3641-5	2N4356	PN4356-5	2N5138	PN5138-18
2N3642	PN3642-5	2N4916	PN4916-18	2N5139	PN5139-18
2N3643	PN3643-5	2N4917	PN4917-18	2N5142	PN5142-18
2N3644	PN3644-5	2N4944	PN2222A-18	2N5143	PN5143-18
2N3645	PN3645-5	2N4945	PN2222A-18	2N5910	PN5910-18
2N3646	PN3646-18	2N4946	PN2222A-18		
2N3691	PN3691-18	2N4964	MPSA70-18		

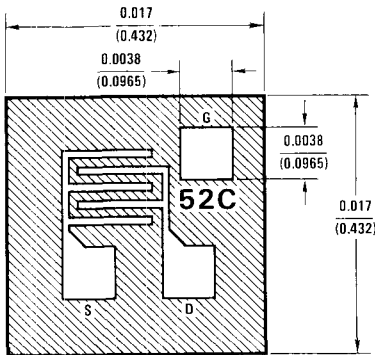
FETs

TO-106	TO-92	TO-106	TO-92	TO-106	TO-92
E100	J203-18	E300	J300-18	KE4393	PN4393-18
E101	J201-18	E304	J304-18	KE4416	PN4416-18
E102	J202-18	E305	J305-18	KE4857	PN4857-18
E103	J203-18	E308	J308-18	KE4858	PN4858-18
E108	J108-18	E309	J309-18	KE4859	PN4859-18
E109	J109-18	E310	J310-18	KE4860	PN4860-18
E110	J110-18	E311	J309-18	KE4861	PN4861-18
E111	J111-18	E312	J310-18	ITE4391	PN4391-18
E112	J112-18	KE3684	PN3684-18	ITE4392	PN4392-18
E113	J113-18	KE3685	PN3685-18	ITE4393	PN4393-18
E114	J114-18	KE3686	PN3686-18	P1086E	P1086E
E174	J174-18	KE3687	PN3687-18	P1087E	P1087E
E175	J175-18	KE4091	PN4091-18	U1897E	U1897E
E176	J176-18	KE4092	PN4092-18	U1898E	U1898E
E201	J201-18	KE4093	PN4093-18	U1899E	U1899E
E202	J202-18	KE4220	PN4220-18	2N4302	PN4302-18
E203	J203-18	KE4221	PN4221-18	2N4303	PN4303-18
E210	J210-18	KE4222	PN4222-18	2N4304	PN4304-18
E211	J211-18	KE4223	PN4223-18	2N4342	PN4342-18
E212	J212-18	KE4224	PN4224-18	2N4343	PN4343-18
E270	J270-18	KE4391	PN4391-18	2N4360	PN4360-18
E271	J271-18	KE4392	PN4392-18	2N5033	PN5033
				2N5163	PN5163



Process 52 N-Channel JFET

Process 52



DESCRIPTION

Process 52 is designed primarily for low level audio and general purpose applications. These devices provide excellent performance as input stages for piezo electric transducers or other high impedance signal sources. Their high output impedance and high voltage breakdown lend them to high gain audio and video amplifier applications. Source and drain are interchangeable.

CHARACTERISTIC	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Gate-Source Breakdown Voltage	BV_{GSS}	$V_{DS} = 0V, I_G = -1 \mu A$	-40	-70		V
Drain Saturation Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	0.2	1.5	12	mA
Forward Transconductance	g_{fs}	$V_{DS} = 20V, V_{GS} = 0V$	1.0	2.5	5.0	mmho
Forward Transconductance	g_{fs}	$V_{DS} = 20V, I_D = 200 \mu A$		700		μmho
Reverse Gate Leakage Current	I_{GSS}	$V_{GS} = -30V, V_{DS} = 0V$		-10		μA
Drain ON Resistance	r_{DS}	$V_{DS} = 100 mV, V_{GS} = 0V$	250	400	2000	Ω
Gate Cutoff Voltage	$V_{GS(OFF), VP}$	$V_{DS} = 15V, I_D = 1 nA$	-0.3	1.0	-8.0	V
Output Conductance	g_{os}	$V_{DG} = 15V, I_D = 200 \mu A$		2.0		μmho
Feedback Capacitance	C_{rss}	$V_{DG} = 15V, V_{GS} = 0V, f = 1 MHz$		1.3	1.8	pF
Input Capacitance	C_{iss}	$V_{DG} = 15V, V_{GS} = 0V, f = 1 MHz$		5	6	pF
Noise Voltage	e_n	$V_{DG} = 15V, I_D = 200 \mu A, f = 100 Hz$		10		nV/\sqrt{Hz}

This process is available in the following device types.

* Denotes preferred parts.

TO-18 (CASE 02)

2N3069
2N3070
2N3071
2N3368
2N3369
2N3370
2N3458
2N3459
2N3460
*2N4338
*2N4339
*2N4340
*2N4341

TO-72 (CASE 25)

*2N3684
*2N3685
*2N3686
*2N3687
2N3967
2N3967A
2N3968
2N3968A
2N3969
2N3969A

TO-92 (CASE 72)

*J201
*J202
*J203
*PN3684
*PN3685
*PN3686
*PN3687
*PN4302
*PN4303
*PN4304

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