Now that LS and Toshiba Jfets are available in the store at two different Idss specifications (6-8 ma and 8-11 ma), the question arises: What is the best choice for the various projects?

The Idss figure is the current you will see conducted by a Jfet when the Gate and Source pins are shorted together and a nominal DC voltage (like 10V) is applied Drain to Source and the Jfets are offered as matched for Idss within the two ranges.

You can operate the Jfets at lower and higher currents than this figure, but it is generally considered that you want an Idss equal to or higher than the intended use - at currents something like twice Idss you will start seeing Gate currents that will increase the distortion of those parts.

At the same time, there are dissipation limits to these parts, usually 400 milliwatts, and after making allowances for ambient temperatures and a margin for reliability we find ourselves down in the 200 mW range. If you are operating near the voltage limit of 25V, then you want to stay around 8 mA or less to keep inside that figure.

The transconductance of these fets is a function of the operating current, not the Idss, so they are largely identical at any given bias current.

Much of the time, we will choose the 8-11 mA Idss parts since they can be operated at the lower currents as well as the 6-11 mA parts, but there are a couple good reasons to pick the lower Idss parts for many projects:

Reason 1: The parts come in the 6-11 mA range and purchasing them in sub-ranges is either impossible or unreasonably expensive. We can't justify throwing away the 6-7 mA parts, but we can make intelligent decisions about how we use the two groups. If we don't use the lower Idss values, we will have about half as many parts available, and they will cost more.

Reason 2: In the audio circuits we deal with it is unusual to have bias current in excess of 6 or 7 mA, and if we want to operate a Jfet self-biased in this range this requires a degenerating Source resistor, which lowers the gain, raises the output impedance, or otherwise alters the sonic signature of this square-law part.

These would be my choices for various projects:

Aleph J	6-8 mA (operated at 4 mA)
ACP+	6-8 mA (operated at 5 mA)
BA1 Gain Stage	6-8 mA (operated at 5 mA)
BA3 Gain Stage	6-8 mA (2SJ74 operated at 5 mA) / 8-11 mA (2SK170 at 10 mA)
F4	8-11 mA (operated at Idss - 1 mA)
F5	6-8 mA (operated at Idss - 1 mA)
F5T V1,2	6-8 mA (operated at Idss - 1 mA)
F5T V3	8-11 mA (operated at Idss - 1 mA)