Competitive Analysis of IR21571 vs. ST6574 vs. MC33157

IC Features	IR21571	ST6574	MC33157	
Programmable End-of-Life Protection	Yes	No	No	
Over-Temperature Shutdown	Yes	No	No	
Programmable Brown-out Protection	Yes	No	No	
Prorammable Over-Current Protection	Yes	Yes	No	
Capacitive Mode Protection	Yes	No	No	
Automatic Restart	Yes	Yes	No	
Micro-Power Start-up	Yes	Yes	No	
Internal Zener Clamp	Yes	Yes	Yes	
Programmable Soft-start frequency	Yes	No	No	
Programmable Preheat Time	Yes	Yes	Yes	
Programmable Preheat Frequency	Yes	Yes	Yes	
Programmable Ignition Time	Yes	Yes	Yes	
Programmable Ignition Frequency	Yes	Yes	Yes	
Programmable Run Frequency	Yes	Closed-loop	Yes	
Programmable Dead-time	Yes	No	Yes	
Dimming	TBD	Yes	TBD	
Package Size	SO16	SO16	SO16	
Ballast Component Count (see Note 1)	30	30	28	
Ballast System Features				**Unprotected Outcome**
Soft Start-up of Output Stage	Yes	No	No	Possible undesired start-up flash over lamp at the beginning of preheat. Degradation of lamp life.
Lamp Non-strike Shutdown	Yes	Yes	Yes	Over-current, inductor saturation, damage or destruct half-bridge MOSFETs.
Open Filament Shutdown	Yes	Yes	No	Hard-switching at half-bridge which will damage or destruct power MOSFETs.
End-of-Life Shutdown	Yes	No	No	Over-heating of lamp filaments. Glass can melt and fall out of fixture. High current spikes in half-bridge which can damage or destruct power MOSFETs.
Over-temperature Shutdown	Yes	No	No	Thermal destruction of ballast components can cause short or fire.
Brown-out Reset	Yes	No	No	Lamp can extinguish and remain unlit. Entire room will be dark after brown-out.
Automatic Lamp Exchange Restart	Yes	Yes	No	Must recycle mains after lamp exchange. Will increase lamp replacement time.

Note 1: Component count includes ballast output stage, control IC, and programmable components only. Does not include EMI filter, transient protection, bridge rectifier, or PFC.

Conclusions

Both the IR21571 and MC33157 are provide independent settings for open-loop preheat, short-pulse over-current protection during ignition and final running frequency. The ST6574 provides open-loop preheat, short-pulse over-current protection, and closed-loop running. The final component count for all three ICs are about the same for a non-dimming ballast, however, the IR21571 offers 6 additional protection features than the MC33157, and 4 additional protection features than the ST6574. These additional protection features are a must for proper ballast design and for certification by ballast safety testing agencies (UL, VDE, etc.). To realize all of these features with the MC33157 or the ST6574, more external circuitry will be required and will therefore increase component count, increase PCB layout requirements, and decrease manufacturability.