

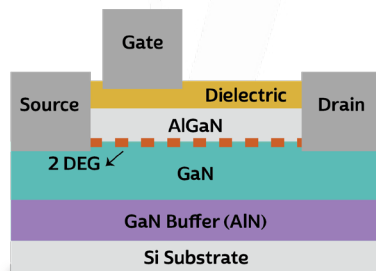
Transphorm GaN

vs. e-mode.

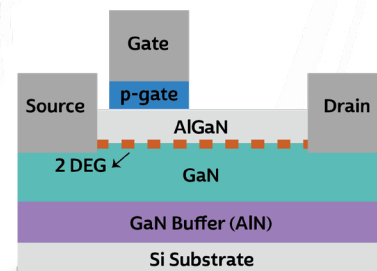


Not all GaN is alike.

Transphorm's GaN delivers higher quality and reliability (Q+R) than today's available e-mode GaN.



Transphorm GaN



Market e-mode GaN

Attribute	Cascode (Transphorm)*	e-mode (market)*
Quality, reliability, lifetime performance	Extended JEDEC, AEC-Q101, lifetime testing	Not available
Device breakdown voltage ($T_J = 150^\circ\text{C}$)	650 V (qualified), 1200 V (measured)	500 V and 600 V (measured)
Maximum transient protection	800 V	750 V
Gate drive safety margin ($R_{ON} @ V_{GS}$)	10 V	1 V
Gate drive noise immunity	4.0 V (typical)	1.7 V (typical)
Negative gate drive required	No	Yes
Slew rate control	Yes	Yes
Reverse conduction operation (V_{SD})	2.2 V to 2.6 V	6 V to 9 V (defined by gate drive)
Saturation current limit ($T_J = 150^\circ\text{C}$)	> 3x higher than e-mode	Reduced channel and gate charge
Paralleling	Up to two TO-XXX devices	More than two devices possible
FOM ($R_{ON} * Q_{OSS}$)	Industry standard	Minimal increase with reduced Q+R
Die size	Industry standard	Smaller with reduced Q+R
Thermal performance ($72 \text{ m}\Omega$)	50°C at 1500 W 83°C at 2526 W	80°C at 1500 W

*Unless specified, data is based on a 50 mΩ device.



AEC-Q101 TPH3205WSBQA