

Features

- 650V enhancement mode power switch
- Top cooled configuration
- Ultra low FOM Island Technology[™] die
- Low inductance GaN_{PX}[™] package
- Reverse current capability
- Integral source sense
- Dual gate pads for optimal board layout
- Zero reverse recovery loss
- RoHS 6 compliant

Applications

- On-board battery chargers
- 400V DC-DC conversion
- Inverters, UPS, and VFD motor drive
- AC-DC power supplies (PFC & primary)
- VHF small form factor power adapters
- High frequency, high efficiency power conversion





TP = thermal pad - internally connected to the source (S) and to the substrate.

Absolute Maximum Ratings ($T_{case} = 25^{\circ}C$ except as noted)

Parameters	Symbol	Value	Units
Operating Junction Temperature	٦	-55 to +150	°C
Storage Temperature Range	Ts	-55 to +150	°C
Drain-to-Source Voltage	V _{DS}	650	V
Gate-to-Source Voltage	V_{GS}	±10	V
Continuous Drain Current (T _{case} =25°C)	I _{DS(cont)25}	30	Α
Continuous Drain Current (T _{case} =100°C)	I _{DS(cont)100}	23	Α
Pulsed Drain Current (T _{case} =25°C)	I _{D,pulse}	60	Α

Thermal Characteristics (Typical values unless otherwise noted)

Parameters	Symbol	Value	Units
Thermal Resistance (junction to case)	R _{OJC}	0.50	°C/W
Maximum Soldering Temperature (MSL3 rated)	T _{SOLD}	260	°C

Ordering Information

Part number	Package type	Ordering code	Packing method
GS66508T	GaNPX top-cooled	GS66508T-TR	Tape-and-reel
GS66508T	GaNPX top-cooled	GS66508T-MR	Mini-reel

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Parameters	Symbol	Value	Units	Conditions	
Drain-to-Source Breakdown Voltage (Min.)	BV _{DSS}	650	V	V _{GS} =0V	
Drain-to-Source On Resistance (T _J =25°C)	R _{DS(ON)}	55	mΩ	V _{GS} =7V, T _J =25°C	
Drain-to-Source On Resistance (T _J =150°C)		140	mΩ	V _{GS} =7V, T _J =150°C	
Gate Threshold Voltage	$V_{GS(th)}$	1.6	V	$V_{DS} = V_{GS}$	
Drain to Source Leakage Current (TJ=25°C)		2.0	μΑ	V _{DS} =650V V _{GS} =0V, T _J =25°C	
Drain to Source Leakage Current (TJ=150°C)	IDSS	400	μΑ	V _{DS} =650V V _{GS} =0 V, T _J =150°C	
Gate to Source Current	I _{GS}	40	μΑ	V_{GS} =7V, V_{DS} =0V	
Gate Resistance	R _G	1.5	Ω	f=1MHz, open drain	
Gate Plateau Voltage	V_{plat}	3.0	V	V _{DS} =400V	
Source-Drain Reverse Voltage	V_{SD}	2.8	V	$V_{GS}=0V, T_J=25^{\circ}C$	
Input Capacitance	C _{ISS}	200	pF	V _{DS} =400V V _{GS} =0V f=1MHz	
Output Capacitance	Coss	67			
Reverse Transfer Capacitance	C _{RSS}	2.0			
Effective Output Capacitance, Energy Related	C _{o(er)}	88	pF	$V_{GS}=0V$ $V_{DS}=0$ to 400V	
Effective Output Capacitance, Time Related	C _{o(tr)}	143	pF	$I_{D} = constant$ $V_{GS} = 0V$ $V_{DS} = 0 to 400V$	
Total Gate Charge	Q _{G(TOT)}	6.5	nC		
Gate-to-Source Charge	Q _{GS}	1.4	nC	V _{GS} =0 to 7V V _{DS} =400V	
Gate-to-Drain Charge	Q _{GD}	2.8	nC		
Reverse Recovery Charge	Q _{RR}	0	nC		
Output Charge	Qoss	57	nC	V _{GS} =0V V _{DS} =400V	

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GS66508T Top cooled 650V enhancement mode GaN transistor PRELIMINARY DATASHEET



Recommended Minimum Footprint



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