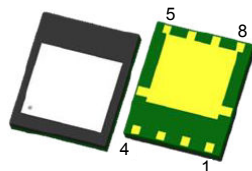
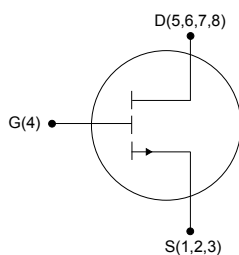


100 V, 1.1 mΩ typ., 474 A, e-mode PowerGaN transistor



En-FCLGA 5x6



G4D5678S123



Product status link

[SGT1D5R10MEA](#)

Product summary

Order code	SGT1D5R10MEA
Marking	1D5R10M
Package	En-FCLGA 5x6
Packing	Tape and reel

Features

Order code	V_{DS}	$R_{DS(on)}$ max.	I_D	Series
SGT1D5R10MEA	100 V	1.5 mΩ	474 A	G-HEMT

- Enhancement mode normally off transistor
- Very high switching speed
- High power management capability
- Extremely low capacitances
- Zero reverse recovery charge

Applications

- DC-DC converters
- Motor driver
- Solar system MPPT

Description

The [SGT1D5R10MEA](#) is a 100 V, 474 A e-mode PowerGaN transistor. The resulting device provides extremely low conduction losses, high current capability and ultra-fast switching operation to enable high power density and unbeatable efficiency performances.

1 Electrical ratings

$T_C = 25\text{ °C}$ unless otherwise specified.

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source voltage	100	V
V_{GS}	Gate-source voltage	-4 to 6	V
I_D	Drain current (continuous) at $T_C = 25\text{ °C}$	474	A
	Drain current (continuous) at $T_C = 100\text{ °C}$	300	
I_{DM}	Pulse drain current ($V_{GS} = 5\text{ V}$, $T_J = 25\text{ °C}$, $t_p = 100\text{ }\mu\text{s}$)	980	A
P_{TOT}	Total power dissipation at $T_C = 25\text{ °C}$	658	W
T_{stg}	Storage temperature range	-55 to 150	°C
T_J	Operating junction temperature range	-40 to 150	°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance, junction-to-case	0.2	°C/W
$R_{thJA}^{(1)}$	Thermal resistance, junction-to-ambient	38.1	°C/W

1. When mounted on a standard 1 inch² area of FR-4 PCB with 2-oz copper.

2 Electrical characteristics

$T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Table 3. Static

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{DSS}	Drain-source leakage current	$V_{GS} = 0\text{ V}, V_{DS} = 100\text{ V}$		2.5	200	μA
		$V_{GS} = 0\text{ V}, V_{DS} = 100\text{ V}, T_J = 125\text{ }^{\circ}\text{C}$		500		
I_{GSS}	Gate-source leakage current	$V_{DS} = 0\text{ V}, V_{GS} = 6\text{ V}$		2	200	μA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 19\text{ mA}$	0.9	1.1	2.1	V
$R_{DS(on)}$	Static drain-source on-resistance	$V_{GS} = 5\text{ V}, I_D = 2.5\text{ A}$		1.1	1.5	m Ω

Table 4. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}$	-	2350	-	pF
C_{oss}	Output capacitance		-	1010	-	pF
C_{rss}	Reverse transfer capacitance		-	14	-	pF
$C_{o(er)}^{(1)}$	Equivalent output capacitance energy related	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}$	-	1415	-	pF
$C_{o(tr)}^{(2)}$	Equivalent output capacitance time related		-	2000	-	pF
R_g	Intrinsic gate resistance	$f = 5\text{ MHz}, I_D = 0\text{ A}$	-	0.73	-	Ω
V_{plat}	Gate plateau voltage	$V_{GS} = 5\text{ V}, V_{DS} = 50\text{ V}, I_D = 50\text{ A}$	-	1.9	-	V
Q_g	Total gate charge	$V_{GS} = 5\text{ V}, V_{DS} = 50\text{ V}, I_D = 50\text{ A}$	-	19	-	nC
Q_{gs}	Gate-source charge		-	4.2	-	nC
Q_{gd}	Gate-drain charge		-	3	-	nC
$Q_{gs(th)}$	Gate charge at threshold		-	2.4	-	nC
Q_{rr}	Reverse recovery charge	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}$	-	0	-	nC
Q_{oss}	Output charge		-	100	-	nC

- $C_{o(er)}$ is a constant capacitance value that gives the same stored energy as C_{oss} while V_{DS} is rising from 0 to the stated value.
- $C_{o(tr)}$ is a constant capacitance value that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to the stated value.

Table 5. Reverse conduction

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_{SD}	Source-drain reverse voltage	$V_{GS} = 0\text{ V}, I_{SD} = 50\text{ A}$	-	1.8	-	V



Revision history

Table 6. Document revision history

Date	Revision	Changes
08-Oct-2025	1	First release.

IMPORTANT NOTICE – READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice.

In the event of any conflict between the provisions of this document and the provisions of any contractual arrangement in force between the purchasers and ST, the provisions of such contractual arrangement shall prevail.

The purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgment.

The purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of the purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

If the purchasers identify an ST product that meets their functional and performance requirements but that is not designated for the purchasers' market segment, the purchasers shall contact ST for more information.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2025 STMicroelectronics – All rights reserved