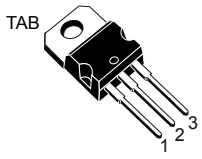
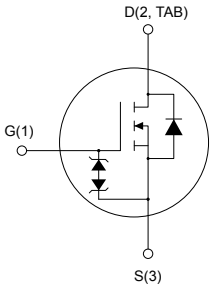
STP26N65DM2

Datasheet

N-channel 650 V, 156 mΩ typ., 20 A, MDmesh DM2 Power MOSFET in a TO-220 package



TO-220



AM01476v1_tab

Features

Order code	V_{DS}	$R_{DS(on)}$ max.	I_D	P_{TOT}
STP26N65DM2	650 V	190 mΩ	20 A	170 W

- Fast-recovery body diode
- Extremely low gate charge and input capacitance
- Low on-resistance
- 100% avalanche tested
- Extremely high dv/dt ruggedness
- Zener-protected

Applications

- Switching applications

Description

This high-voltage N-channel Power MOSFET is part of the MDmesh DM2 fast-recovery diode series. It offers very low recovery charge (Q_{rr}) and time (t_{rr}) combined with low $R_{DS(on)}$, rendering it suitable for the most demanding high-efficiency converters and ideal for bridge topologies and ZVS phase-shift converters.

Product status link
STP26N65DM2

Product summary	
Order code	STP26N65DM2
Marking	26N65DM2
Package	TO-220
Packing	Tube

1 Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{GS}	Gate-source voltage	±25	V
I_D	Drain current (continuous) at T_C = 25 °C	20	A
	Drain current (continuous) at T_C = 100 °C	12.6	
I_{DM}(1)	Drain current (pulsed)	53	A
P_{TOT}	Total dissipation at T_C = 25 °C	170	W
dv/dt(2)	Peak diode recovery voltage slope	50	V/ns
dv/dt(3)	MOSFET dv/dt ruggedness	50	
T_{stg}	Storage temperature range	-55 to 150	°C
T_J	Operating junction temperature range		

1. *Pulse width is limited by safe operating area.*
2. *I_{SD} ≤ 20 A, di/dt=900 A/µs, V_{DS} (peak) < $V_{(BR)DSS}$, V_{DD} = 400 V*
3. *V_{DD} ≤ 520 V*

Table 2. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance, junction-to-case	0.74	°C/W
R_{thJA}	Thermal resistance, junction-to-ambient	62.5	

Table 3. Avalanche characteristics

Symbol	Parameter	Value	Unit
I_{AR}	Avalanche current, repetitive or not repetitive (pulse width limited by T_J max.)	3	A
E_{AS}	Single pulse avalanche energy (starting T_J = 25 °C, I_D = I_{AR}; V_{DD} = 50 V)	530	mJ

2 Electrical characteristics

(T_{case} = 25 °C unless otherwise specified)

Table 4. Static

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	V_{GS} = 0 V, I_D = 1 mA	650			V
I_{DSS}	Zero gate voltage drain current	V_{GS} = 0 V, V_{DS} = 650 V			1	µA
		V_{GS} = 0 V, V_{DS} = 650 V, T_{case} = 125 °C(1)			100	
I_{GSS}	Gate-body leakage current	V_{DS} = 0 V, V_{GS} = ±25 V			±5	µA
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = V_{GS}, I_D = 250 µA	3	4	5	V
$R_{DS(on)}$	Static drain-source on-resistance	V_{GS} = 10 V, I_D = 10 A		156	190	mΩ

1. *Specified by design, not tested in production.*

Table 5. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input capacitance	V_{DS} = 100 V, f = 1 MHz, V_{GS} = 0 V	-	1480	-	pF
C_{oss}	Output capacitance		-	62	-	
C_{rss}	Reverse transfer capacitance		-	2	-	
$C_{oss\ eq.}$(1)	Equivalent output capacitance	V_{DS} = 0 to 520 V, V_{GS} = 0 V	-	140	-	pF
R_g	Intrinsic gate resistance	f = 1 MHz, I_D = 0 A	-	4.6	-	Ω
Q_g	Total gate charge	V_{DD} = 520 V, I_D = 20 A, V_{GS} = 0 to 10 V (see Figure 14. Test circuit for gate charge behavior)	-	35.5	-	nC
Q_{gs}	Gate-source charge		-	8.2	-	
Q_{gd}	Gate-drain charge		-	17.6	-	

1. *$C_{oss\ eq.}$ is defined as the constant equivalent capacitance giving the same charging time as C_{oss} when V_{DS} increases from 0 to 80% V_{DSS}.*

Table 6. Switching times

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-on delay time	V_{DD} = 325 V, I_D = 10 A, R_G = 4.7 Ω, V_{GS} = 10 V (see Figure 13. Test circuit for resistive load switching times and Figure 18. Switching time waveform)	-	17	-	ns
t_r	Rise time		-	7	-	
$t_{d(off)}$	Turn-off delay time		-	51	-	
t_f	Fall time		-	10	-	

Table 7. Source-drain diode

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{SD}	Source-drain current		-		20	A
I_{SDM}(1)	Source-drain current (pulsed)		-		53	A
V_{SD}(2)	Forward on voltage	V_{GS} = 0 V, I_{SD} = 20 A	-		1.6	V
t_{rr}	Reverse recovery time	I_{SD} = 20 A, di/dt = 100 A/µs, V_{DD} = 100 V (see Figure 15. Test circuit for inductive load switching and diode recovery times)	-	100		ns
Q_{rr}	Reverse recovery charge		-	0.365		µC
I_{RRM}	Reverse recovery current		-	7.3		A
t_{rr}	Reverse recovery time	I_{SD} = 20 A, di/dt = 100 A/µs, V_{DD} = 100 V, T_J = 150 °C (see Figure 15. Test circuit for inductive load switching and diode recovery times)	-	200		ns
Q_{rr}	Reverse recovery charge		-	1.39		µC
I_{RRM}	Reverse recovery current		-	13.9		A

1. *Pulse width is limited by safe operating area.*
2. *Pulse test: pulse duration = 300 µs, duty cycle 1.5%.*

2.1 Electrical characteristics (curves)

Figure 1. Safe operating area

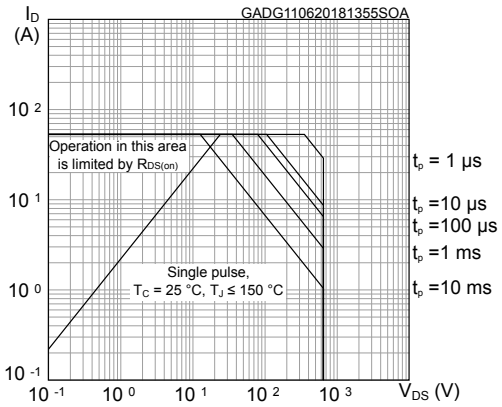


Figure 2. Thermal impedance

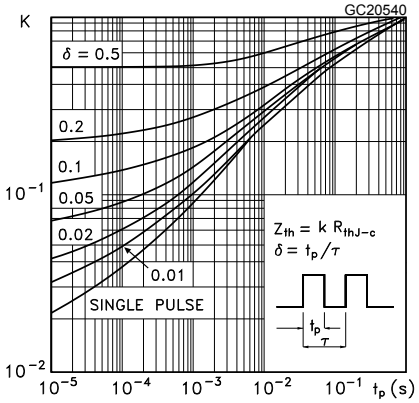


Figure 3. Output characteristics

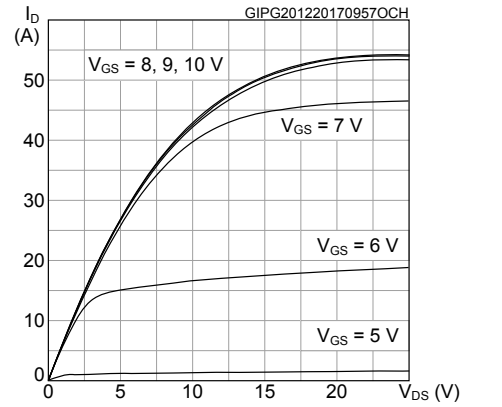


Figure 4. Transfer characteristics

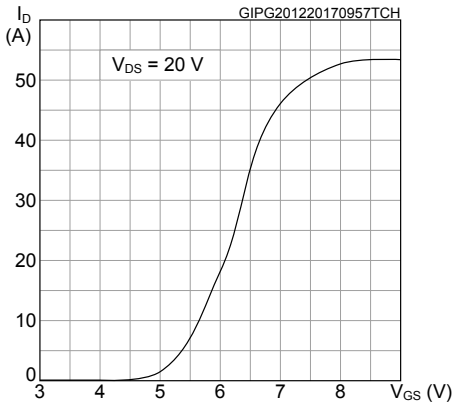


Figure 5. Gate charge vs gate-source voltage

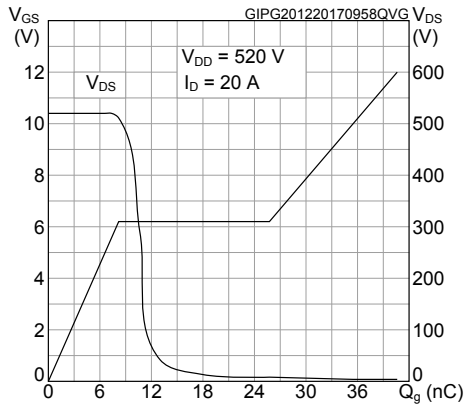


Figure 6. Static drain-source on-resistance

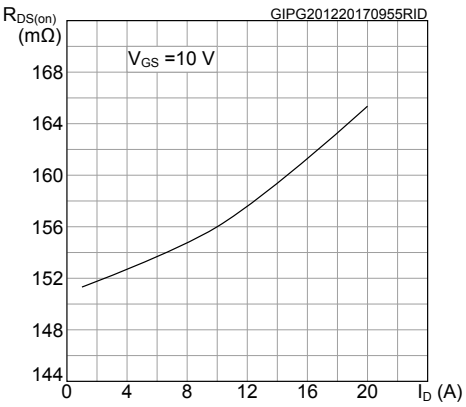


Figure 7. Capacitance variations

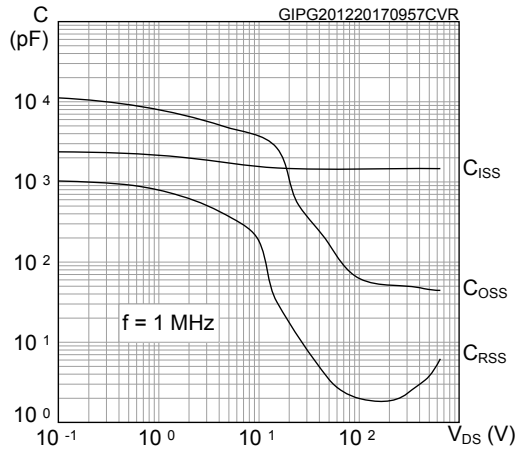


Figure 8. Normalized gate threshold voltage vs temperature

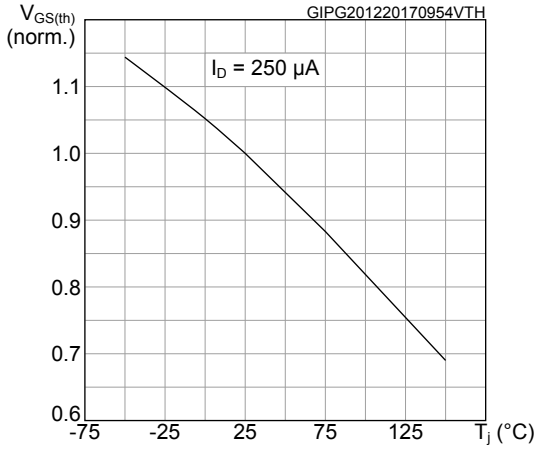


Figure 9. Normalized on-resistance vs temperature

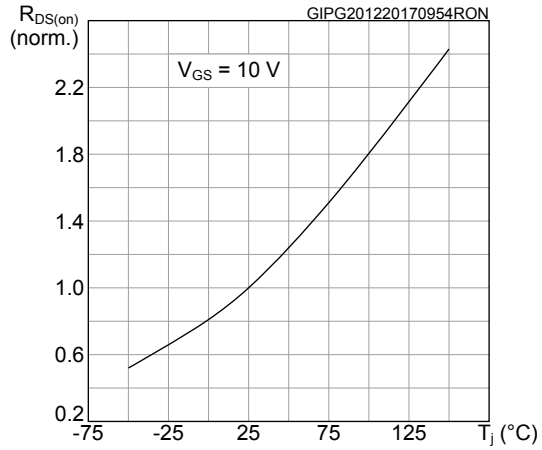


Figure 10. Normalized $V_{(BR)DSS}$ vs temperature

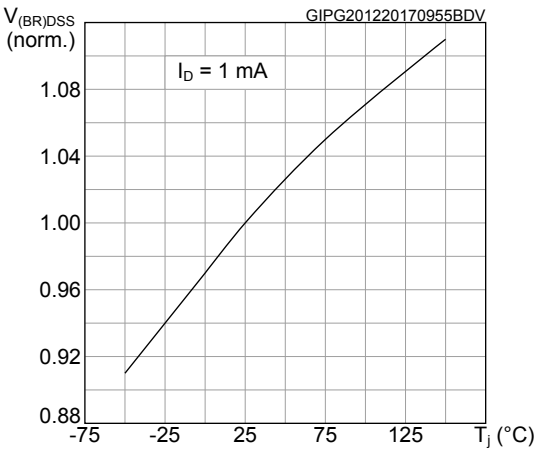


Figure 11. Output capacitance stored energy

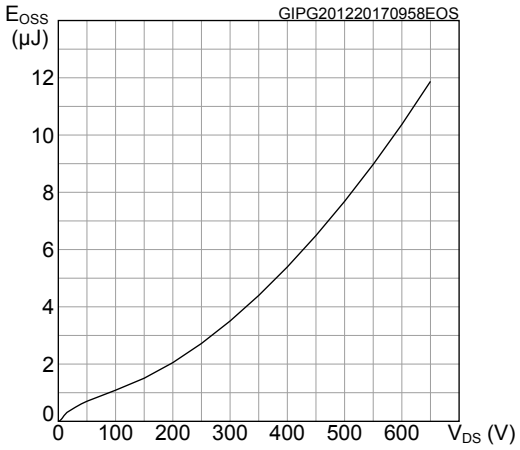
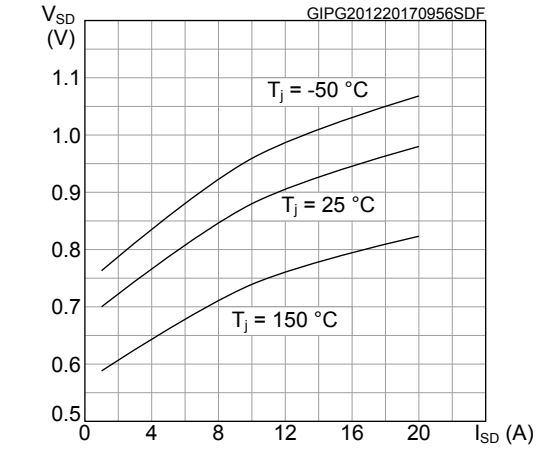
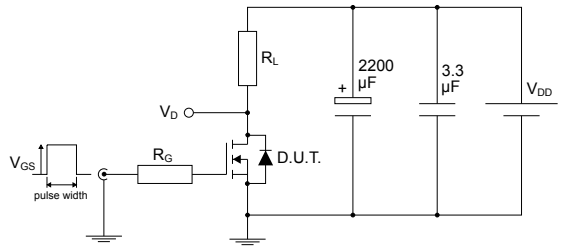


Figure 12. Source-drain diode forward characteristics



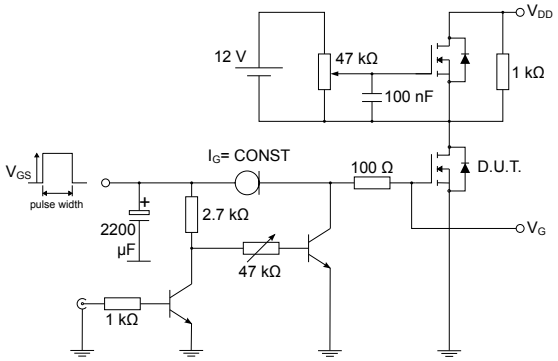
3 Test circuits

Figure 13. Test circuit for resistive load switching times



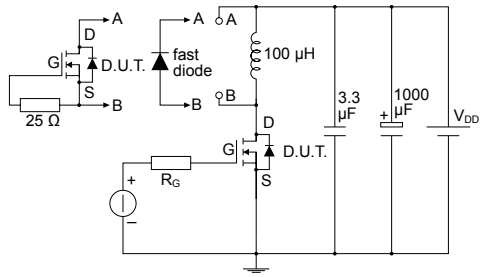
AM01468v1

Figure 14. Test circuit for gate charge behavior



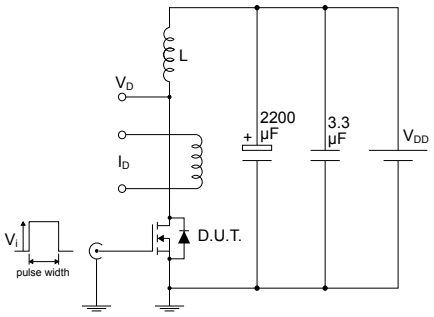
AM01469v1

Figure 15. Test circuit for inductive load switching and diode recovery times



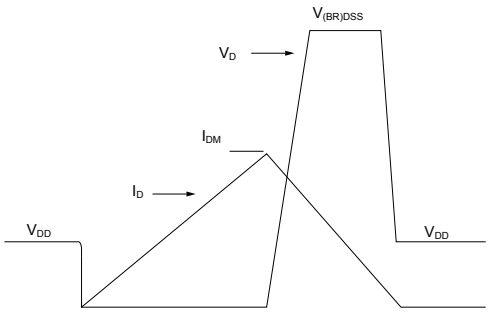
AM01470v1

Figure 16. Unclamped inductive load test circuit



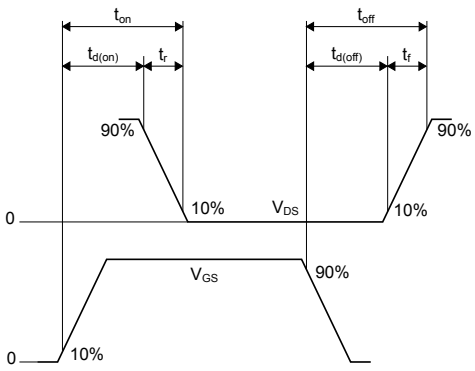
AM01471v1

Figure 17. Unclamped inductive waveform



AM01472v1

Figure 18. Switching time waveform



AM01473v1

4 Package information

To meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions, and product status are available at: www.st.com. ECOPACK is an ST trademark.

4.1 TO-220 type A package information

Figure 19. TO-220 type A package outline

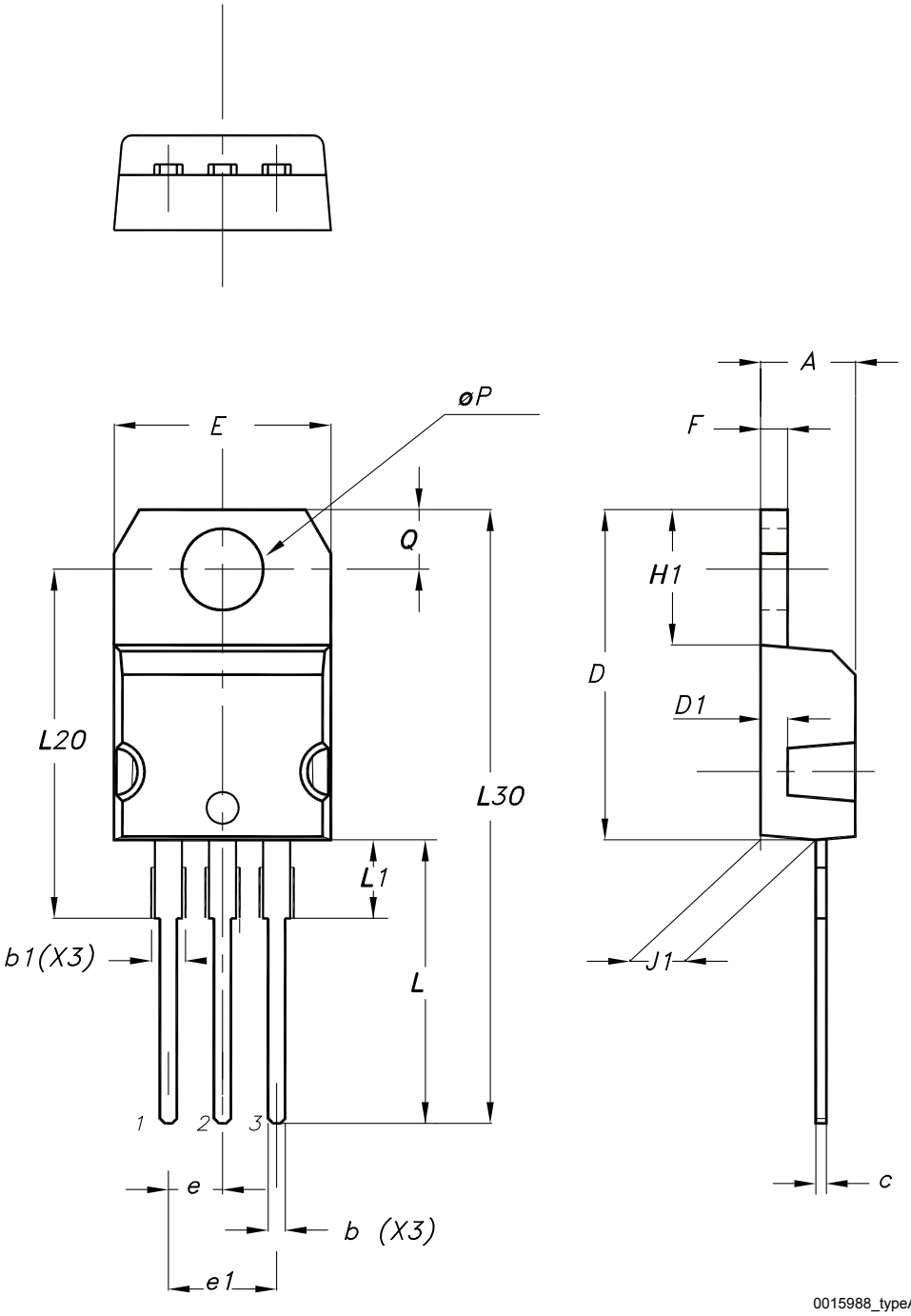


Table 8. **TO-220 type A package mechanical data**

Dim.	mm		
	Min.	Typ.	Max.
A	4.40		4.60
b	0.61		0.88
b1	1.14		1.55
c	0.48		0.70
D	15.25		15.75
D1		1.27	
E	10.00		10.40
e	2.40		2.70
e1	4.95		5.15
F	1.23		1.32
H1	6.20		6.60
J1	2.40		2.72
L	13.00		14.00
L1	3.50		3.93
L20		16.40	
L30		28.90	
øP	3.75		3.85
Q	2.65		2.95
Slug flatness		0.03	0.10

Revision history

Table 9. **Document revision history**

Date	Version	Changes
02-Jul-2018	1	Initial release. The document status is production data.
02-Feb-2026	2	Updated Section 4.1: TO-220 type A package information. Minor text changes.

Contents

1 **Electrical ratings** 2
2 **Electrical characteristics** 3
2.1 Electrical characteristics (curves) 5
3 **Test circuits** 7
4 **Package information** 8
4.1 TO-220 type A package information 8
Revision history 10

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.

© 2026 STMicroelectronics – All rights reserved