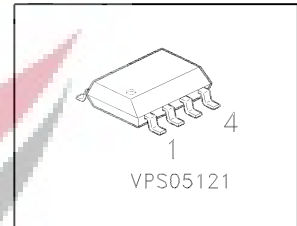
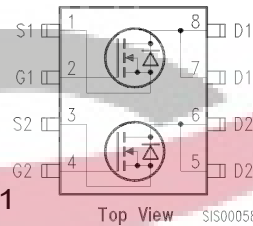


SIPMOS® Small-Signal-Transistor
Features

- Dual N Channel
- Enhancement mode
- Avalanche rated
- Logic Level
- dv/dt rated
- Pb-free lead plating; RoHS compliant
- Qualified according to AEC Q101
- Halogen-free according to IEC61249-2-21

Product Summary

Drain source voltage	V_{DS}	60	V
Drain-Source on-state resistance	$R_{DS(on)}$	0.15	Ω
Continuous drain current	I_D	2.6	A



Type	Package	Marking
BSO 615N	SO 8	615N

Maximum Ratings, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current, <i>one channel active</i>	I_D	2.6	A
Pulsed drain current, <i>one channel active</i>	I_{Dpulse}	10.4	
$T_A = 25\text{ }^\circ\text{C}$			
Avalanche energy, single pulse	E_{AS}	60	mJ
$I_D = 2.6\text{ A}, V_{DD} = 25\text{ V}, R_{GS} = 25\text{ }\Omega$			
Avalanche current, periodic limited by T_{jmax}	I_{AR}	2.6	A
Avalanche energy, periodic limited by T_{jmax}	E_{AR}	0.18	mJ
Reverse diode dv/dt	dv/dt	6	kV/ μs
$I_S = 2.6\text{ A}, V_{DS} = 40\text{ V}, di/dt = 200\text{ A}/\mu\text{s}, T_{jmax} = 150\text{ }^\circ\text{C}$			
Gate source voltage	V_{GS}	± 20	V
Power dissipation, <i>one channel active</i>	P_{tot}	2	W
$T_A = 25\text{ }^\circ\text{C}$			
Operating temperature	T_j	-55 ... +150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 ... +150	
IEC climatic category; DIN IEC 68-1		55/150/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - soldering point	R_{thJS}	-	-	35	K/W
Thermal resistance @ 10 sec., min. footprint	$R_{th(JA)}$	-	-	100	
Thermal resistance @ 10 sec., 6 cm ² cooling area ¹⁾	$R_{th(JA)}$	-	-	62.5	

Electrical Characteristics, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage $V_{GS} = 0\text{ V}$, $I_D = 0.25\text{ mA}$	$V_{(BR)DSS}$	60	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D = 20\text{ }\mu\text{A}$	$V_{GS(th)}$	1.2	1.6	2	
Zero gate voltage drain current $V_{DS} = 60\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 25\text{ }^\circ\text{C}$ $V_{DS} = 60\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 150\text{ }^\circ\text{C}$	I_{DSS}	-	0.1 10	1 100	μA
Gate-source leakage current $V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	-	10	100	nA
Drain-Source on-state resistance $V_{GS} = 4.5\text{ V}$, $I_D = 2.6\text{ A}$	$R_{DS(on)}$	-	0.12	0.15	Ω

¹ Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical without blown air.

Electrical Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Transconductance $V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = 2.6$ A	g_{fs}	2.4	5.5	-	S
Input capacitance $V_{GS} = 0$ V, $V_{DS} = 25$ V, $f = 1$ MHz	C_{iss}	-	300	380	pF
Output capacitance $V_{GS} = 0$ V, $V_{DS} = 25$ V, $f = 1$ MHz	C_{oss}	-	90	120	
Reverse transfer capacitance $V_{GS} = 0$ V, $V_{DS} = 25$ V, $f = 1$ MHz	C_{rss}	-	50	65	
Turn-on delay time $V_{DD} = 30$ V, $V_{GS} = 4.5$ V, $I_D = 2.6$ A, $R_G = 16$ Ω	$t_{d(on)}$	-	12	20	ns
Rise time $V_{DD} = 30$ V, $V_{GS} = 4.5$ V, $I_D = 2.6$ A, $R_G = 16$ Ω	t_r	-	15	25	
Turn-off delay time $V_{DD} = 30$ V, $V_{GS} = 4.5$ V, $I_D = 2.6$ A, $R_G = 16$ Ω	$t_{d(off)}$	-	20	30	
Fall time $V_{DD} = 30$ V, $V_{GS} = 4.5$ V, $I_D = 2.6$ A, $R_G = 16$ Ω	t_f	-	15	25	

SKYTECH
ELECTRONIC

Electrical Characteristics, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

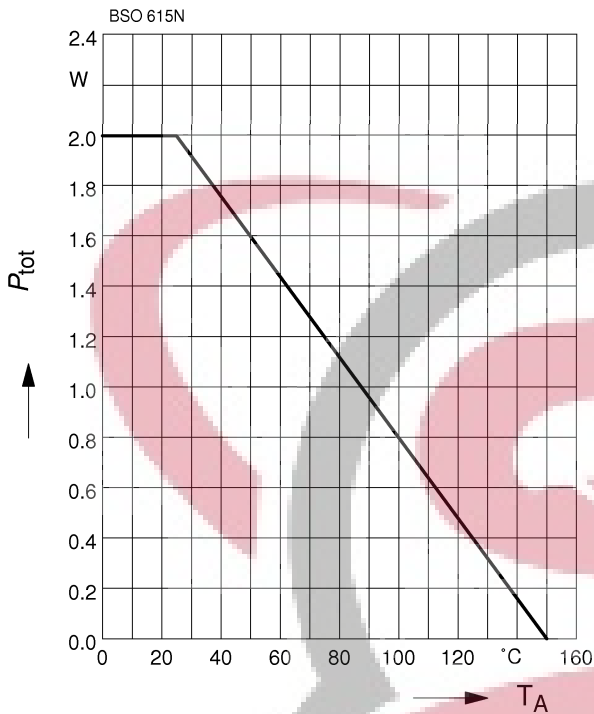
Parameter at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Gate charge at threshold $V_{DD} = 40\text{ V}$, $I_D = 0.1\text{ A}$, $V_{GS} = 1\text{ V}$	$Q_{G(th)}$	-	0.4	0.6	nC
Gate charge at $V_{gs}=5V$ $V_{DD} = 40\text{ V}$, $I_D = 2.6\text{ A}$, $V_{GS} = 0\text{ to }5\text{ V}$	$Q_{g(5)}$	-	7	10	
Gate charge total $V_{DD} = 40\text{ V}$, $I_D = 2.6\text{ A}$, $V_{GS} = 0\text{ to }10\text{ V}$	Q_g	-	14	20	nC
Gate plateau voltage $V_{DD} = 40\text{ V}$, $I_D = 2.6\text{ A}$	$V_{(plateau)}$	-	3.6	-	V

Reverse Diode

Inverse diode continuous forward current $T_A = 25\text{ }^\circ\text{C}$	I_S	-	-	2.6	A
Inverse diode direct current,pulsed $T_A = 25\text{ }^\circ\text{C}$	I_{SM}	-	-	10.4	
Inverse diode forward voltage $V_{GS} = 0\text{ V}$, $I_F = 5.2\text{ A}$	V_{SD}	-	0.95	1.2	V
Reverse recovery time $V_R = 30\text{ V}$, $I_F = I_S$, $di_F/dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	50	75	ns
Reverse recovery charge $V_R = 30\text{ V}$, $I_F = I_S$, $di_F/dt = 100\text{ A}/\mu\text{s}$	Q_{rr}	-	0.1	0.15	μC

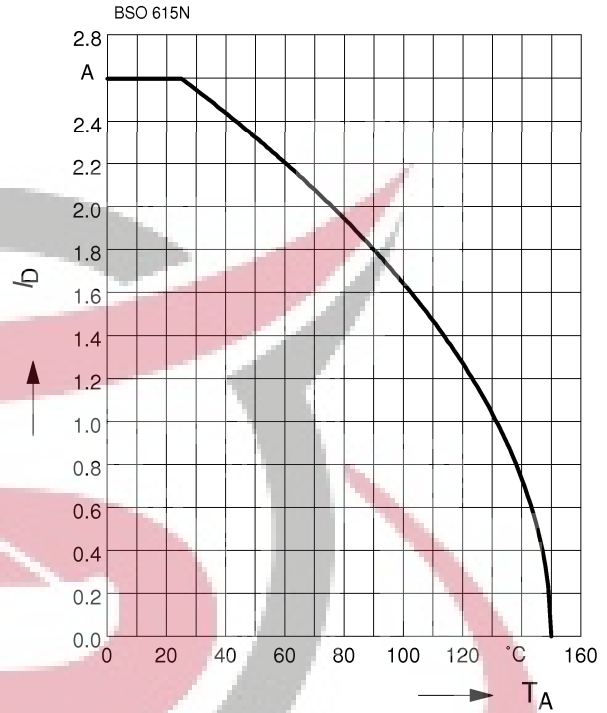
Power Dissipation

$P_{tot} = f(T_A), V_{GS} = 4,5\text{ V}$



Drain current

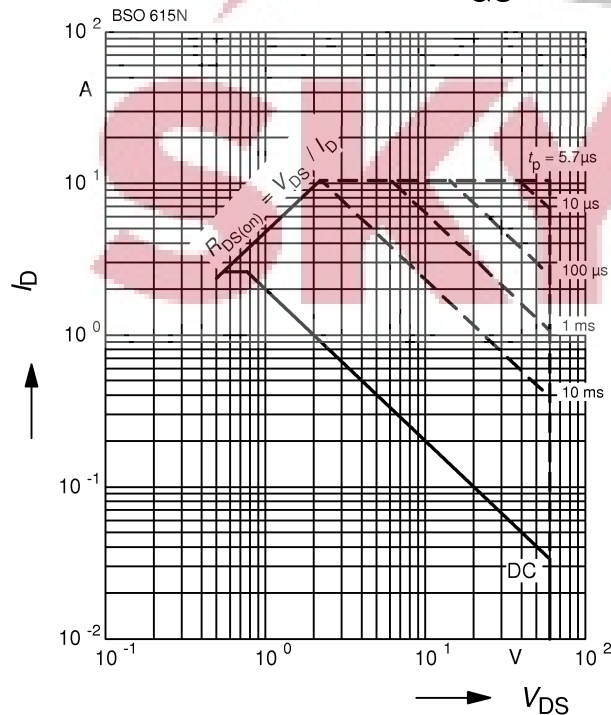
$I_D = f(T_A), V_{GS} = 4,5\text{ V}$



Safe operating area

$I_D = f(V_{DS})$

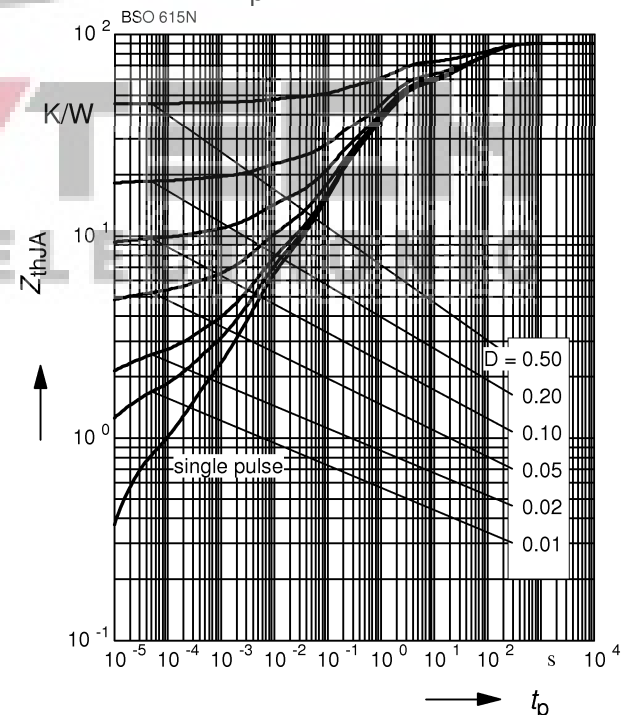
parameter : $D = 0, T_A = 25\text{ °C}, V_{GS} = 4,5\text{ V}$



Transient thermal impedance

$Z_{thJA} = f(t_p)$

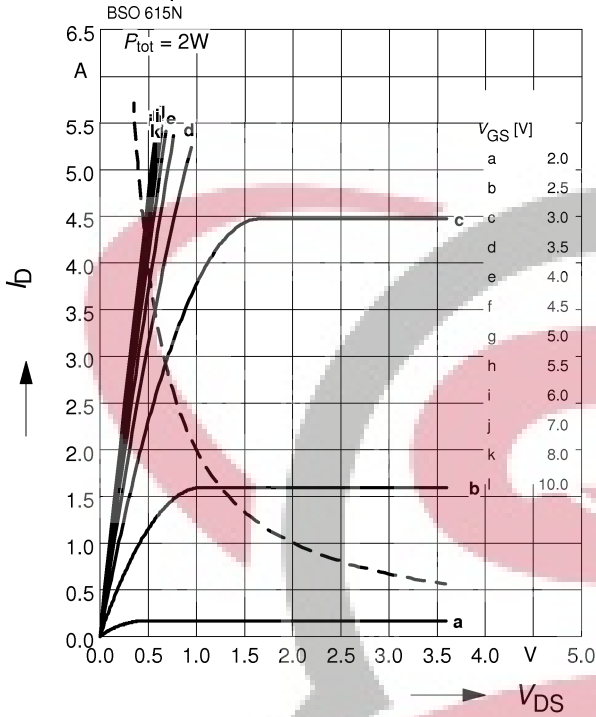
parameter : $D = t_p/T$



Typ. output characteristics

$I_D = f(V_{DS})$

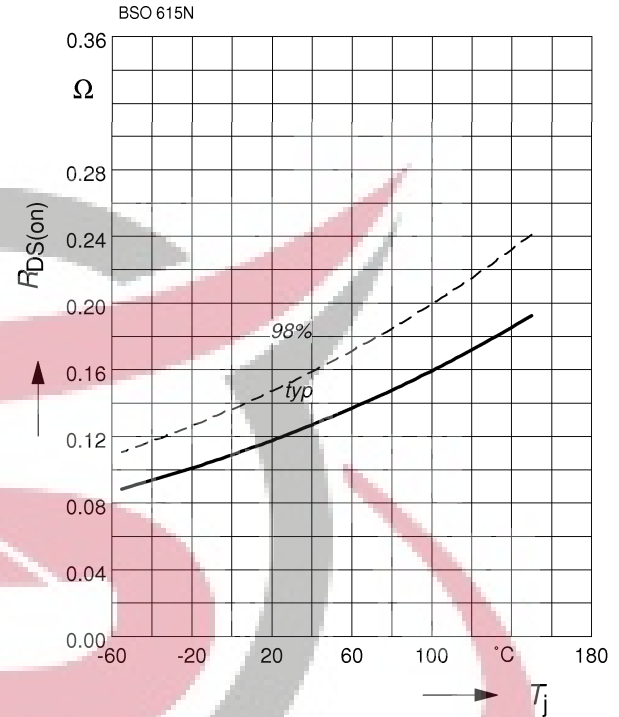
parameter: $t_p = 80 \mu s$



Drain-source on-resistance

$R_{DS(on)} = f(T_j)$

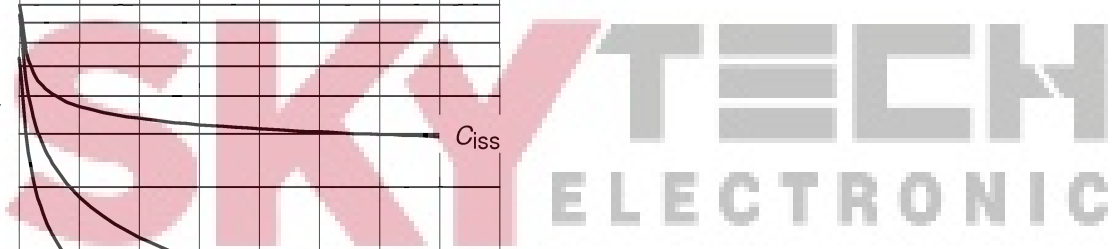
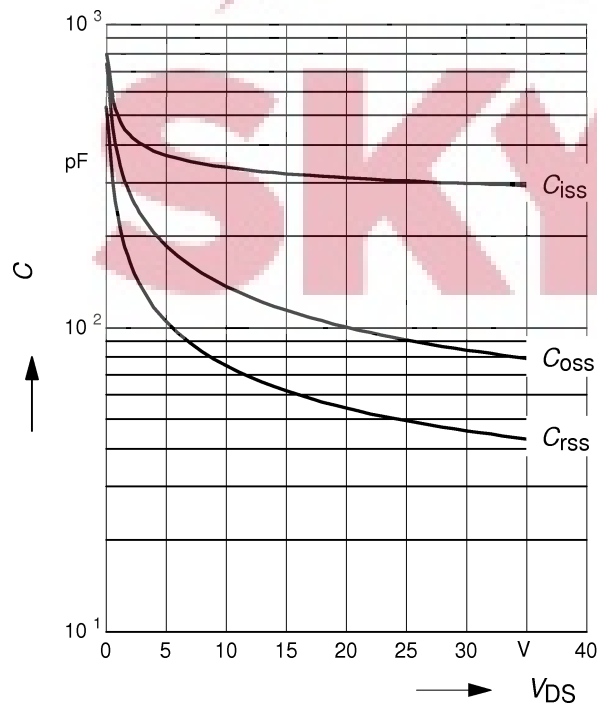
parameter : $I_D = 2.6 A, V_{GS} = 4.5 V$



Typ. capacitances

$C = f(V_{DS})$

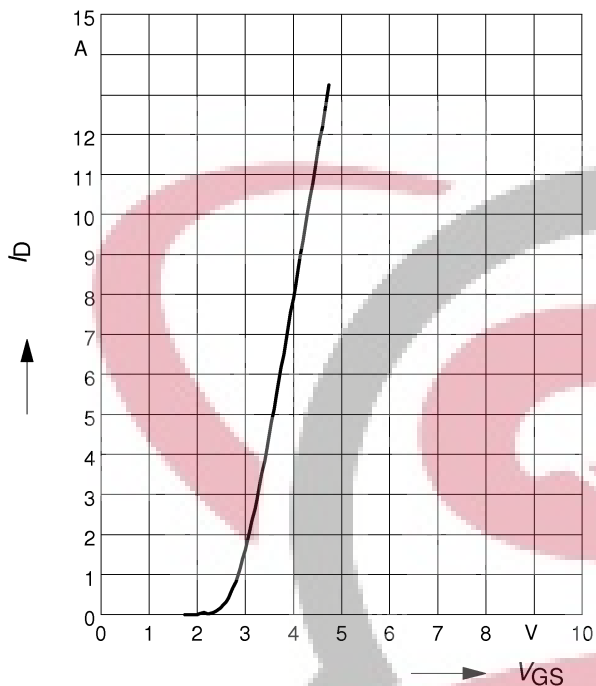
parameter: $V_{GS} = 0 V, f = 1 MHz$



Typ. transfer characteristics $I_D = f(V_{GS})$

parameter: $t_p = 80 \mu s$

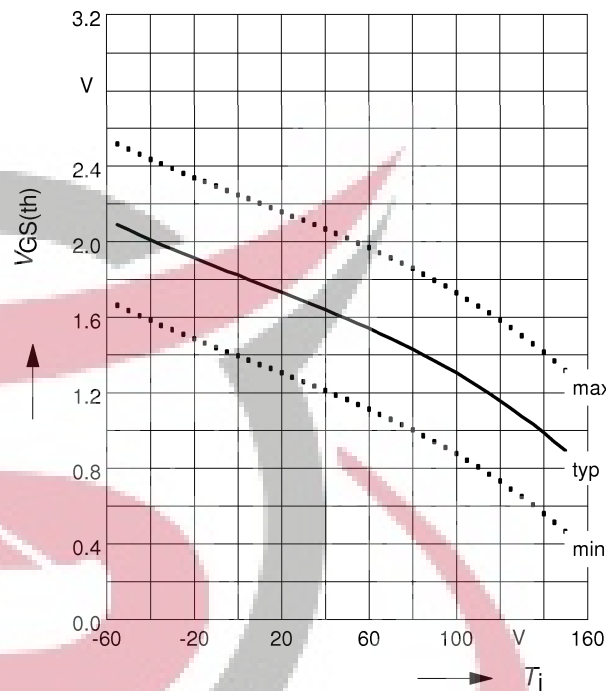
$V_{DS} \geq 2 \times I_D \times R_{DS(on) \max}$



Gate threshold voltage $V_{GS(th)} = f(T_j)$

parameter: $V_{GS} = V_{DS}, I_D = 20 \mu A$

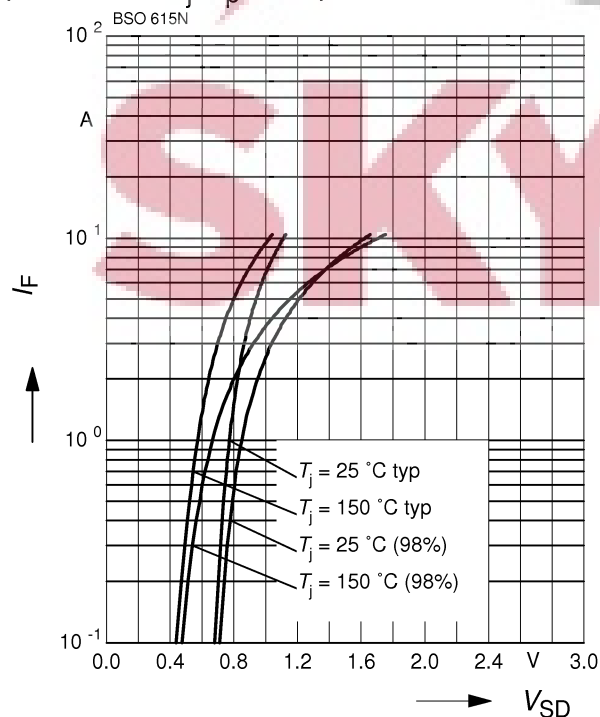
parameter: $V_{GS} = V_{DS}, I_D = 20 \mu A$



Forward characteristics of reverse diode $I_F = f(V_{SD})$

parameter: $T_j, t_p = 80 \mu s$

parameter: $T_j, t_p = 80 \mu s$

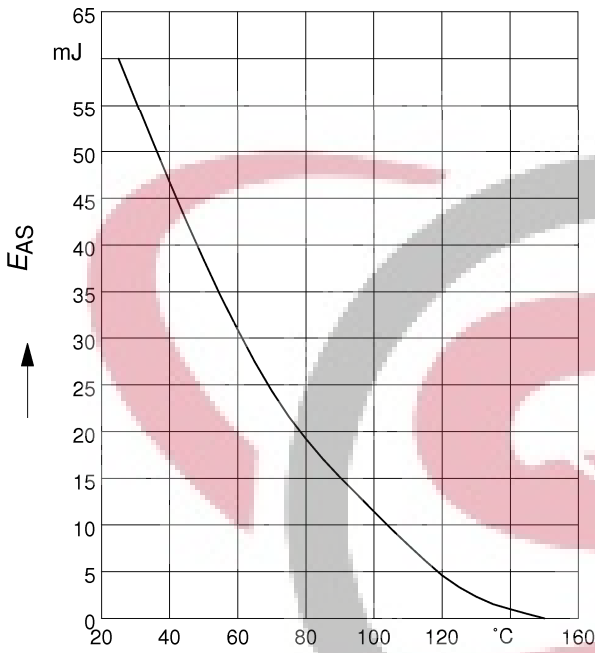


SKYTECH
ELECTRONIC

Avalanche Energy $E_{AS} = f(T_j)$

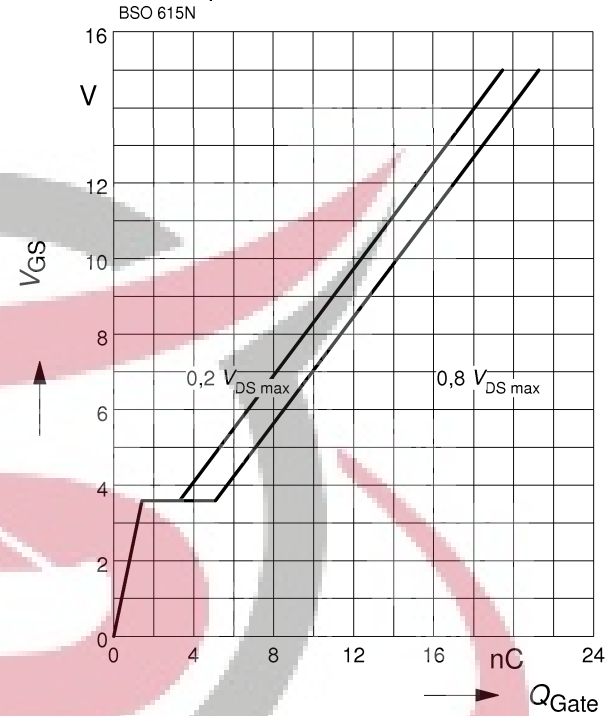
parameter: $I_D = 2.6 \text{ A}$, $V_{DD} = 25 \text{ V}$

$R_{GS} = 25 \Omega$

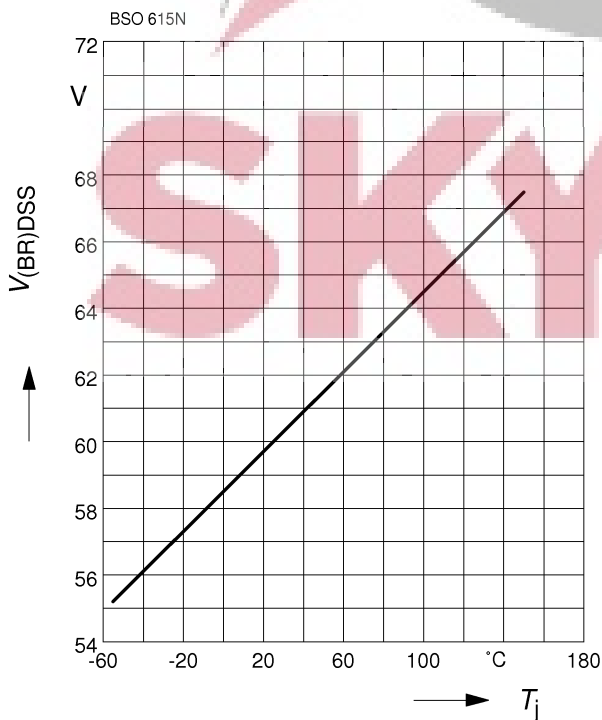


Typ. gate charge $V_{GS} = f(Q_{Gate})$

parameter: $I_{D \text{ puls}} = 2.6 \text{ A}$



Drain-source breakdown voltage $V_{(BR)DSS} = f(T_j)$



SKYTECH
ELECTRONIC

Revision History

BSO615N G

Revision: 2019-07-31, Rev. 2.0

Previous Revision

Revision	Date	Subjects (major changes since last revision)
2.0	2019-07-31	Release of final version

Trademarks

All referenced product or service names and trademarks are the property of their respective owners.

We Listen to Your Comments

Any information within this document that you feel is wrong, unclear or missing at all? Your feedback will help us to continuously improve the quality of this document. Please send your proposal (including a reference to this document) to:

erratum@infineon.com

Published by

Infineon Technologies AG
81726 München, Germany
© 2019 Infineon Technologies AG
All Rights Reserved.

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

Information

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

The Infineon Technologies component described in this Data Sheet may be used in life-support devices or systems and/or automotive, aviation and aerospace applications or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support, automotive, aviation and aerospace device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Infineon:](#)

[BSO615N G](#)

