## OptiMOS™-T2 Power-Transistor

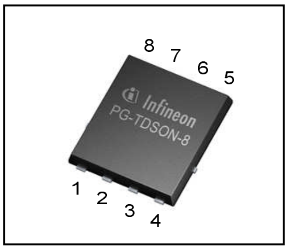
### Product Summary

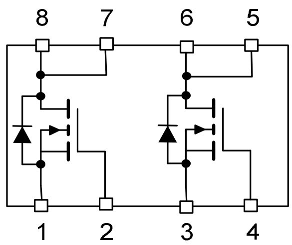
| | | |
|---|---|---|
| $V_{DS}$ | 100 | V |
| $R_{DS(on),max}$ 3) | 61 | mΩ |
| $I_D$ | 16 | A |

### Features

- Dual N-channel Normal Level - Enhancement mode
- AEC Q101 qualified
- MSL1 up to 260°C peak reflow
- 175°C operating temperature
- Green Product (RoHS compliant)
- 100% Avalanche tested

PG-TDSON-8-4




| Type | Package | Marking |
|---|---|---|
| IPG16N10S4-61 | PG-TDSON-8-4 | 4N1061 |

**Maximum ratings,** at $T_j$=25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | Value | Unit |
|---|---|---|---|---|
| Continuous drain current<br>one channel active | $I_D$ | $T_C$=25 °C, $V_{GS}$=10 V | 16 | A |
| | | $T_C$=100 °C,<br>$V_{GS}$=10 V[1)] | 11 | |
| Pulsed drain current[1)]<br>one channel active | $I_{D,pulse}$ | - | 64 | |
| Avalanche energy, single pulse[1, 3)] | $E_{AS}$ | $I_D$=8A | 33 | mJ |
| Avalanche current, single pulse[3)] | $I_{AS}$ | - | 10 | A |
| Gate source voltage | $V_{GS}$ | - | ±20 | V |
| Power dissipation<br>one channel active | $P_{tot}$ | $T_C$=25 °C | 29 | W |
| Operating and storage temperature | $T_j$, $T_{stg}$ | - | -55 ... +175 | °C |

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | |
| **Thermal characteristics**[1) | | | | | | |
| Thermal resistance, junction - case | $R_{thJC}$ | - | - | - | 5.2 | K/W |
| SMD version, device on PCB | $R_{thJA}$ | minimal footprint | - | 100 | - | |
| | | 6 $cm^2$ cooling area[2)] | - | 60 | - | |
| **Electrical characteristics,** at $T_j$=25 °C, unless otherwise specified | | | | | | |
| **Static characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=1mA | 100 | - | - | V |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=9µA | 2.0 | 2.8 | 3.5 | |
| Zero gate voltage drain current[4)] | $I_{DSS}$ | $V_{DS}$=100V, $V_{GS}$=0V, $T_j$=25°C | - | 0.01 | 1 | µA |
| | | $V_{DS}$=100V, $V_{GS}$=0V, $T_j$=125°C[2)] | - | 1 | 100 | |
| Gate-source leakage current[3)] | $I_{GSS}$ | $V_{GS}$=20V, $V_{DS}$=0V | - | - | 100 | nA |
| Drain-source on-state resistance[3)] | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=16A | - | 53 | 61 | mΩ |

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | |
| **Dynamic characteristics**[1] | | | | | | |
| Input capacitance[3] | $C_{iss}$ | $V_{GS}$=0V, $V_{DS}$=25V, $f$=1MHz | - | 374 | 490 | pF |
| Output capacitance[3] | $C_{oss}$ | | - | 120 | 156 | |
| Reverse transfer capacitance[3] | $C_{rss}$ | | - | 10 | 20 | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=50V, $V_{GS}$=10V, $I_D$=16A, $R_G$=11Ω | - | 3 | - | ns |
| Rise time | $t_r$ | | - | 1 | - | |
| Turn-off delay time | $t_{d(off)}$ | | - | 5 | - | |
| Fall time | $t_f$ | | - | 5 | - | |
| **Gate Charge Characteristics**[1, 3] | | | | | | |
| Gate to source charge | $Q_{gs}$ | $V_{DD}$=50V, $I_D$=16A, $V_{GS}$=0 to 10V | - | 2 | 2.6 | nC |
| Gate to drain charge | $Q_{gd}$ | | - | 1.3 | 2.6 | |
| Gate charge total | $Q_g$ | | - | 5.4 | 7 | |
| Gate plateau voltage | $V_{plateau}$ | | - | 5.4 | - | V |
| **Reverse Diode** | | | | | | |
| Diode continous forward current[1)] one channel active | $I_S$ | $T_C$=25°C | - | - | 16 | A |
| Diode pulse current[1] one channel active | $I_{S,pulse}$ | | - | - | 64 | |
| Diode forward voltage | $V_{SD}$ | $V_{GS}$=0V, $I_F$=16A, $T_j$=25°C | - | 1.0 | 1.3 | V |
| Reverse recovery time[1] | $t_{rr}$ | $V_R$=50V, $I_F$=$I_S$, d$i_F$/d$t$=100A/µs | - | 50 | - | ns |
| Reverse recovery charge[1, 3] | $Q_{rr}$ | | - | 70 | - | nC |

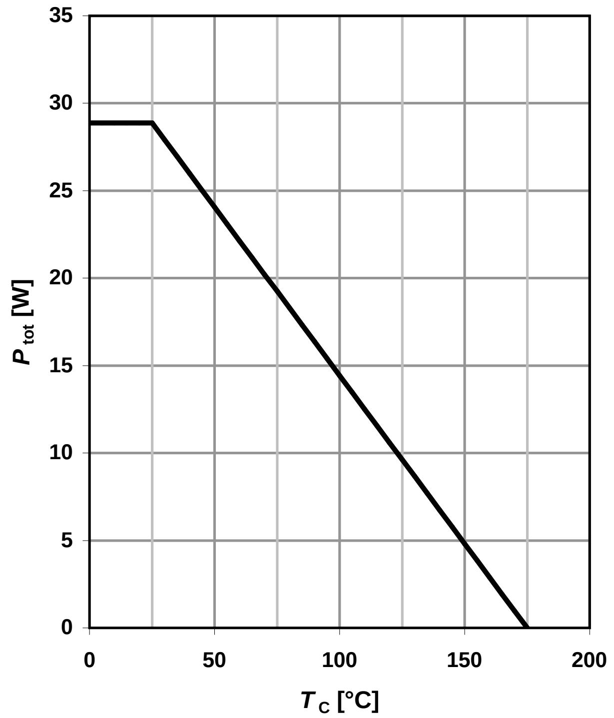
[1] Specified by design. Not subject to production test.

[2] Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 $cm^2$ (one layer, 70 µm thick) copper area for drain connection. PCB is vertical in still air.

[3] Per channel

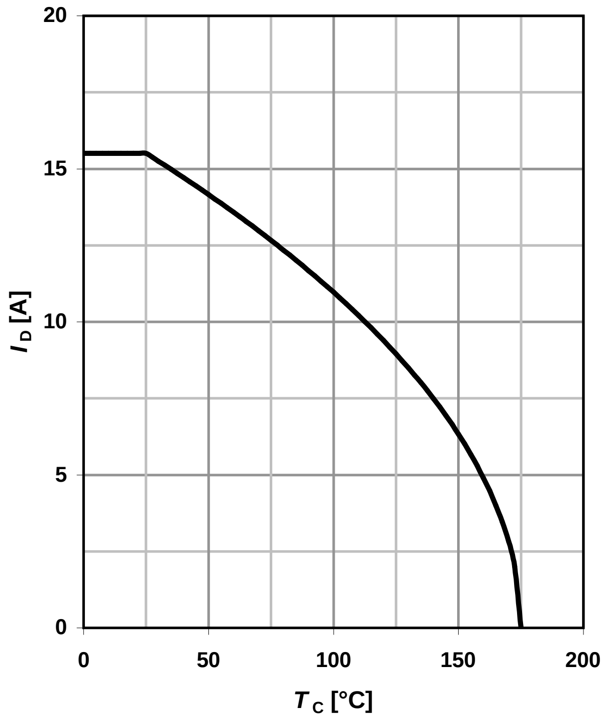
**1 Power dissipation**

$P_{tot} = f(T_C)$; $V_{GS} \geq 6$ V; one channel active




**2 Drain current**

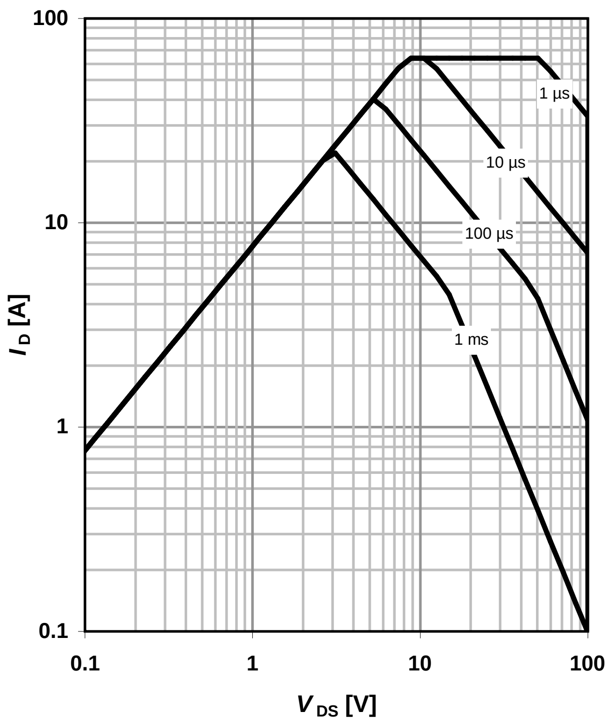
$I_D = f(T_C)$; $V_{GS} \geq 6$ V; one channel active




**3 Safe operating area**

$I_D = f(V_{DS})$; $T_C = 25°C$; $D = 0$; one channel active

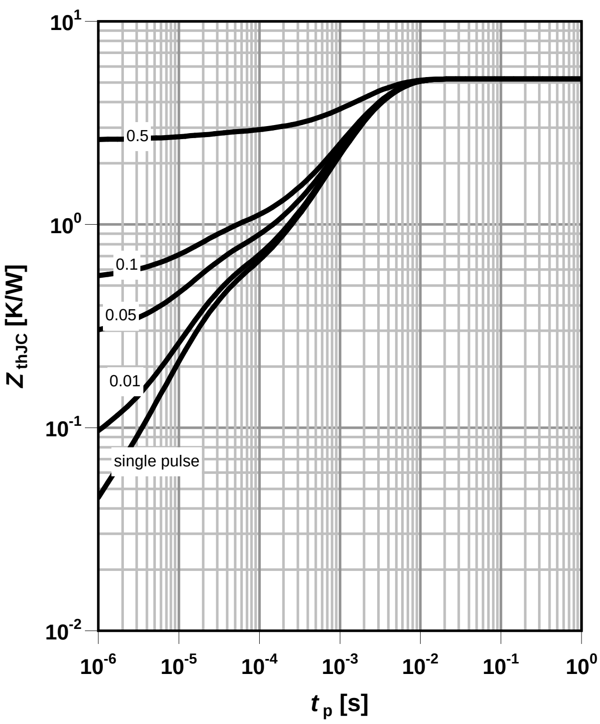
parameter: $t_p$




**4 Max. transient thermal impedance**

$Z_{thJC} = f(t_p)$

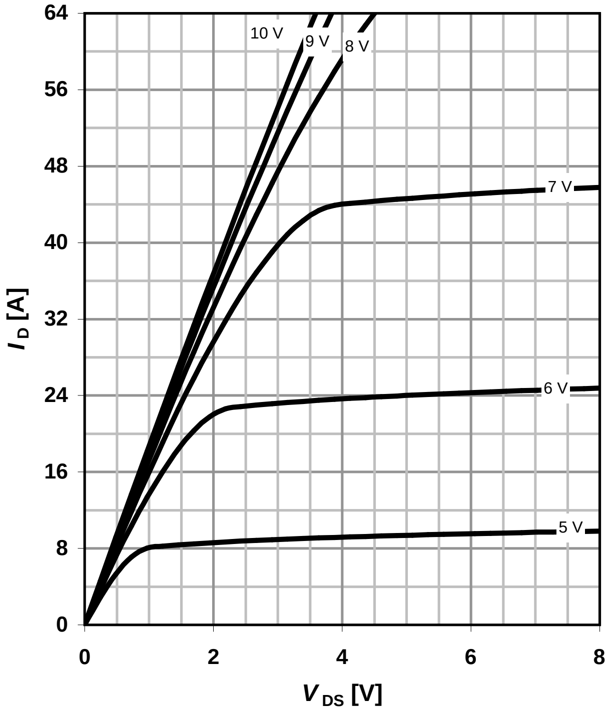
parameter: $D = t_p/T$



### 5 Typ. output characteristics[5)]

$I_D = f(V_{DS})$; $T_j = 25$ °C

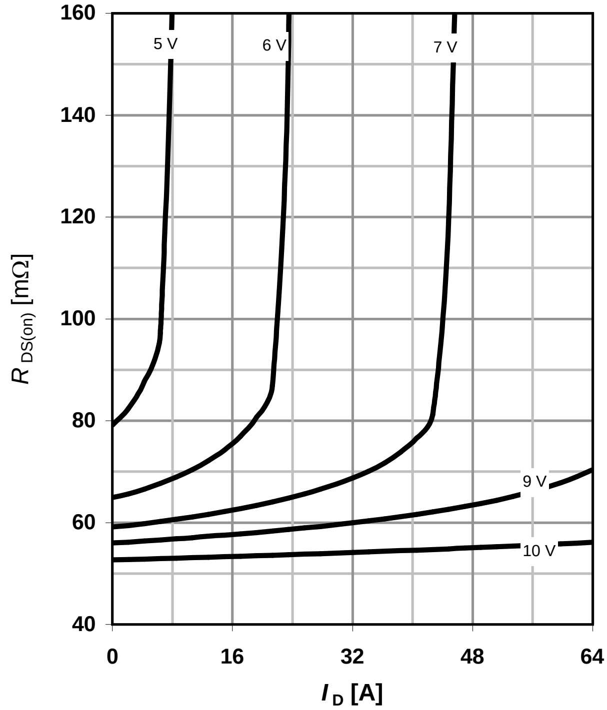
parameter: $V_{GS}$




### 6 Typ. drain-source on-state resistance[5)]

$R_{DS(on)} = f(I_D)$; $T_j = 25$ °C

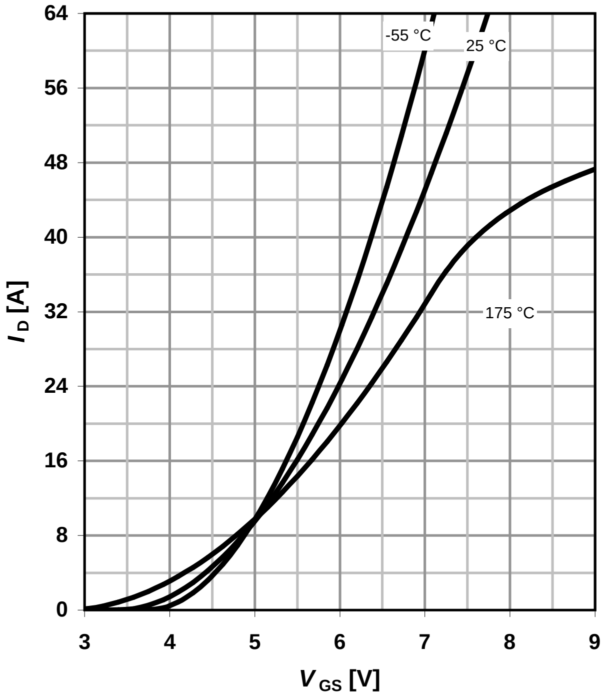
parameter: $V_{GS}$




### 7 Typ. transfer characteristics[5)]

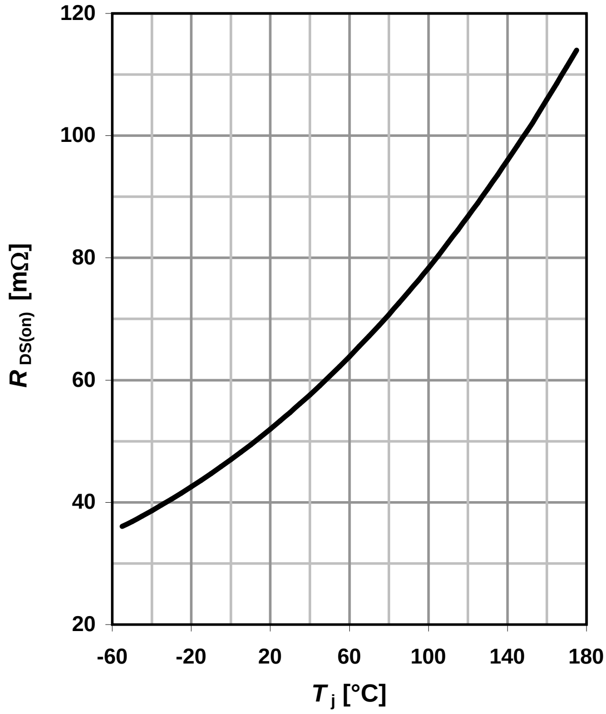
$I_D = f(V_{GS})$; $V_{DS} = 6$V

parameter: $T_j$




### 8 Typ. drain-source on-state resistance

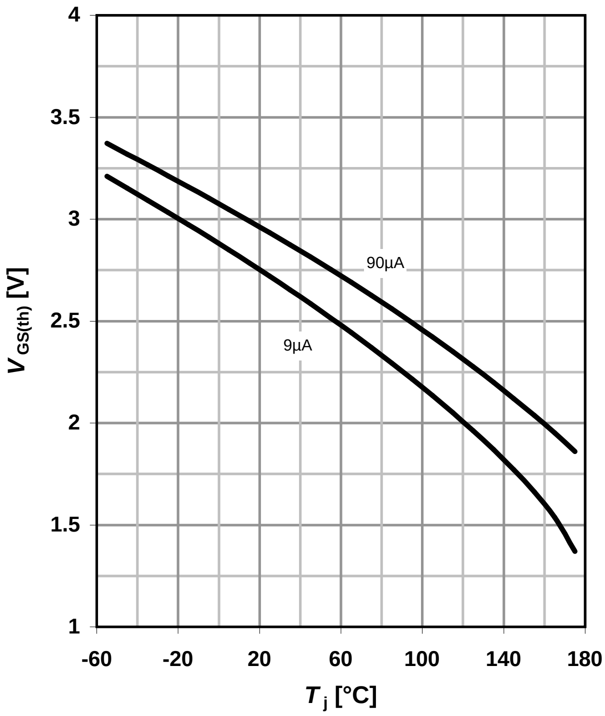
$R_{DS(on)} = f(T_j)$; $I_D = 16$ A; $V_{GS} = 10$ V



**9 Typ. gate threshold voltage**

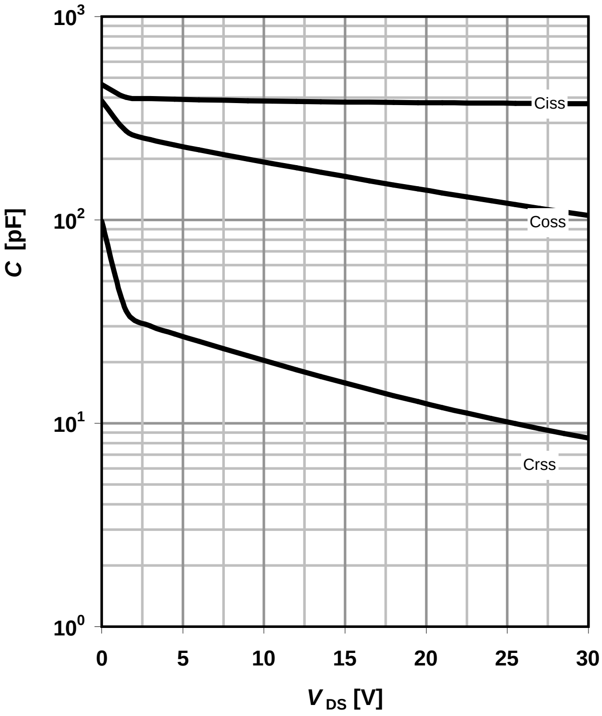
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: $I_D$




**10 Typ. Capacitances[5)]**

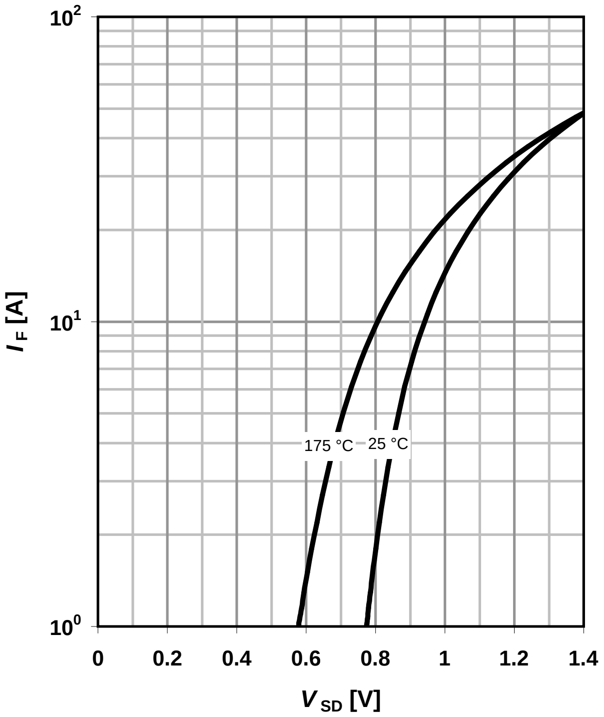
$C = f(V_{DS})$; $V_{GS} = 0$ V; $f = 1$ MHz




**11 Typical forward diode characteristicis[5)]**

$IF = f(V_{SD})$

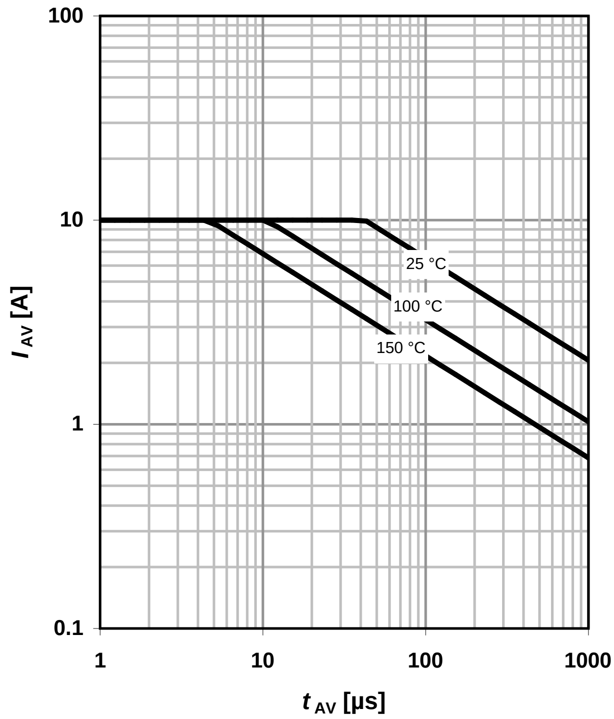
parameter: $T_j$




**12 Avalanche characteristics[5)]**

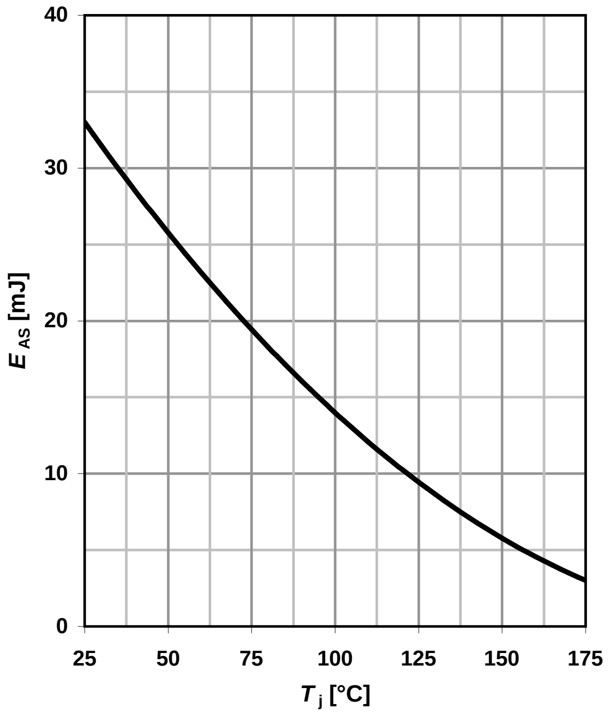
$I_{AS} = f(t_{AV})$

parameter: $T_{j(start)}$



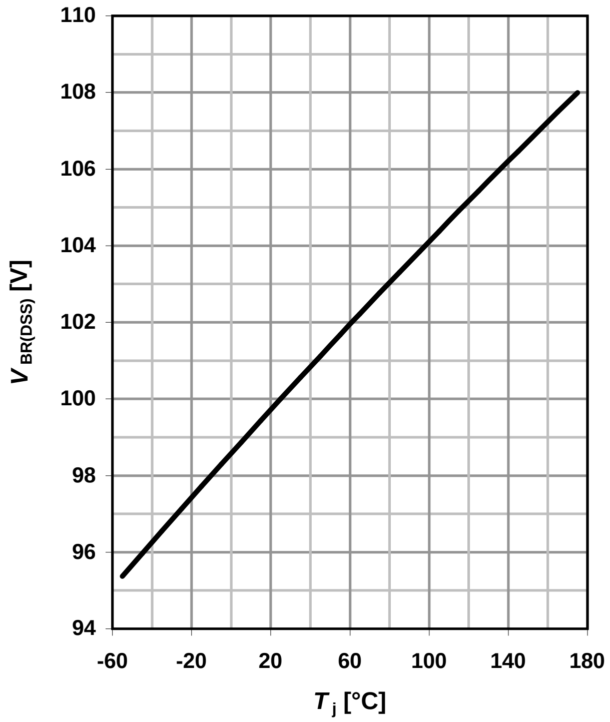
**13 Avalanche energy[5)]**

$E_{AS} = f(T_j)$, $I_D = 8A$




**14 Drain-source breakdown voltage**

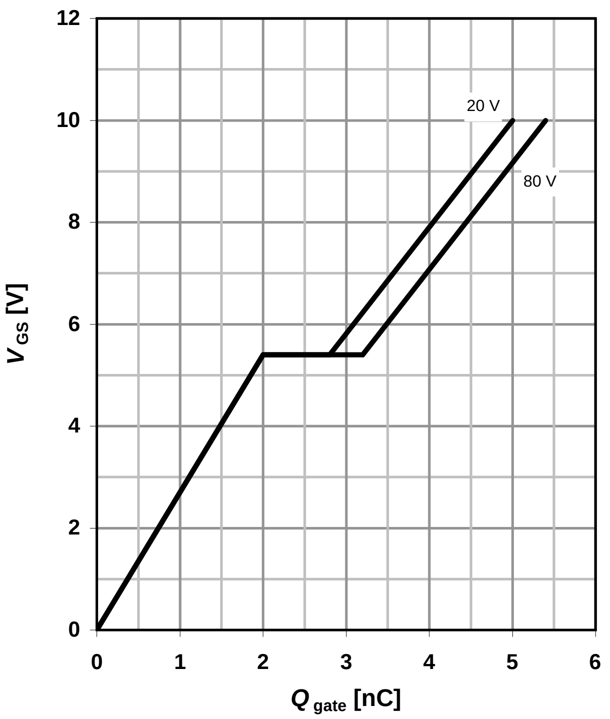
$V_{BR(DSS)} = f(T_j)$; $I_D = 1$ mA



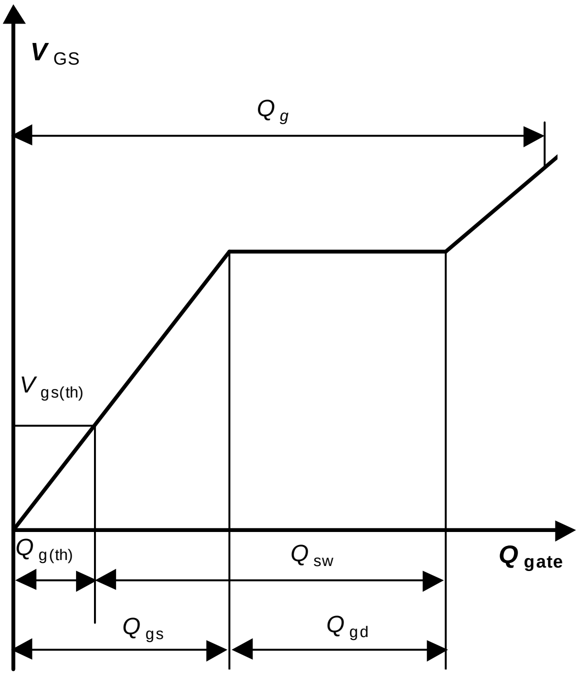

**15 Typ. gate charge[5)]**

$V_{GS} = f(Q_{gate})$; $I_D = 16$ A pulsed

parameter: $V_{DD}$




**16 Gate charge waveforms**



**Published by**
**Infineon Technologies AG**
**81726 Munich, Germany**



**Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, 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.

**Information**

For further information on technology, delivery terms and conditions and prices, please contact the 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.
Infineon Technologies components may be used in life-support devices 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 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.

Revision History

| **Version** | Date | Changes |
| --- | --- | --- |
| Revision 1.0 | 29.11.2011 | Final Data Sheet |
| | | |
| | | |

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.


### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)
**Факс:** 8 (812) 320-02-42
**Электронная почта:** org@eplast1.ru
**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.