IPD5N25S3430ATMA1 Datasheet

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DiGi Electronics Part Number	IPD5N25S3430ATMA1-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	IPD5N25S3430ATMA1
Description	MOSFET N-CH 250V 5A TO252-3
Detailed Description	N-Channel 250 V 5A (Tc) 41W (Tc) Surface Mount PG-TO252-3-313

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
IPD5N25S3430ATMA1	Infineon Technologies
Series:	Product Status:
OptiMOS™	Active
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
250 V	5A (Tc)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
10V	430mOhm @ 5A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
4V @ 13µA	6.2 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	422 pF @ 25 V
FET Feature:	Power Dissipation (Max):
-	41W (Tc)
Operating Temperature:	Grade:
-55°C ~ 175°C (TJ)	Automotive
Qualification:	Mounting Type:
AEC-Q101	Surface Mount
Supplier Device Package:	Package / Case:
PG-TO252-3-313	TO-252-3, DPAK (2 Leads + Tab), SC-63
Base Product Number:	
IPD5N25	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

IPD5N25S3-430

OptiMOS™-T Power-Transistor

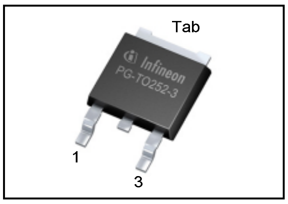
Product Summary

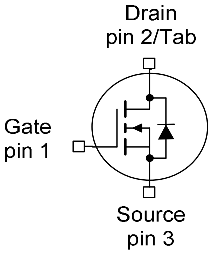
V_{DS}	250	V
$R_{DS(on),max}$	430	mΩ
I_D	5	A

Features

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

PG-TO252-3-313





Type	Package	Marking
IPD5N25S3-430	PG-TO252-3-	3N25430

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_C=25°C, V_{GS}=10V	5	A
		T_C=100°C, V_{GS}=10V$^{1)}$	4	
Pulsed drain current$^{1)}$	$I_{D,pulse}$	T_C=25°C	20	
Avalanche energy, single pulse$^{1)}$	E_{AS}	I_D=1.3A	13	mJ
Avalanche current, single pulse	I_{AS}	-	1.3	A
Reverse diode dv/dt	dv/dt		6	kV/µs
Gate source voltage	V_{GS}	-	±20	V
Power dissipation	P_{tot}	T_C=25°C	41	W
Operating and storage temperature	T_j, T_{stg}	-	-55 ... +175	°C
IEC climatic category; DIN IEC 68-1	-	-	55/175/56	

Parameter	**Symbol**	**Conditions**	**Values**			**Unit**
			min.	**typ.**	**max.**	
Thermal characteristics[1]						
Thermal resistance, junction - case	R_{thJC}	-	-	-	3.7	K/W
SMD version, device on PCB	R_{thJA}	minimal footprint	-	-	40	
		6 cm^2 cooling area[2]	-	-	62	
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	250	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=13µA	2.0	3.0	4.0	
Zero gate voltage drain current	I_{DSS}	V_{DS}=250V, V_{GS}=0V, T_j=25°C	-	0.1	1	µA
		V_{DS}=250V, V_{GS}=0V, T_j=125°C[2]	-	10	100	
Gate-source leakage current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	1	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=5A	-	370	430	mΩ

Parameter	**Symbol**	**Conditions**	**Values**			**Unit**
			min.	**typ.**	**max.**	
Dynamic characteristics1)						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	317	422	pF
Output capacitance	C_{oss}		-	117	156	
Reverse transfer capacitance	C_{rss}		-	6	13	
Turn-on delay time	$t_{d(on)}$	V_{DD}=125V, V_{GS}=10V, I_D=5A, R_G=3.5Ω	-	3	-	ns
Rise time	t_r		-	2	-	
Turn-off delay time	$t_{d(off)}$		-	8	-	
Fall time	t_f		-	5	-	
Gate Charge Characteristics1), 3)						
Gate to source charge	Q_{gs}	V_{DD}=200V, I_D=5A, V_{GS}=0 to 10V	-	1.5	2	nC
Gate to drain charge	Q_{gd}		-	1.3	2.7	
Gate charge total	Q_g		-	4.7	6.2	
Gate plateau voltage	$V_{plateau}$		-	4.7	-	V
Reverse Diode						
Diode continous forward current1)	I_S	T_C=25°C	-	-	5	A
Diode pulse current1)	$I_{S,pulse}$		-	-	20	
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=5A, T_j=25°C	-	0.9	1.2	V
Reverse recovery time1)	t_{rr}	V_R=125V, I_F=5A, di_F/dt=100A/µs	-	70	-	ns
Reverse recovery charge1)	Q_{rr}		-	159	-	nC

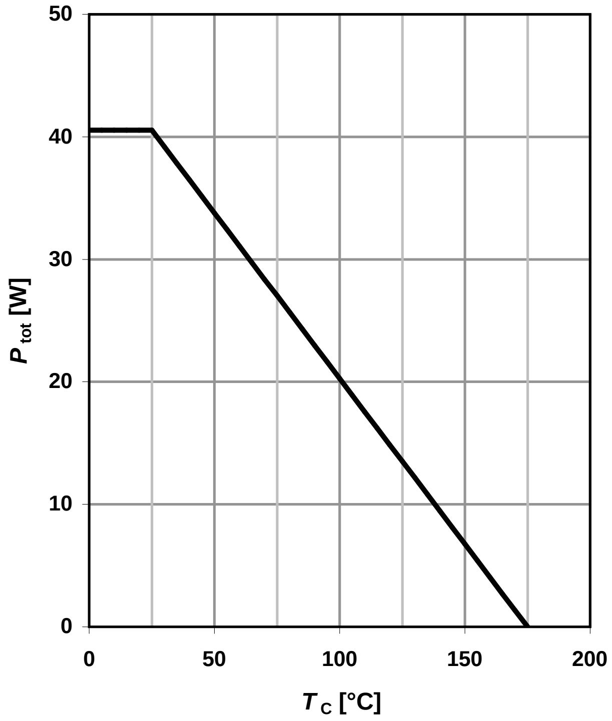
1) Defined by design. Not subject to production test.

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) Devices thermal performance determined according to EIA JESD 51-14
"Transient Dual Interface Test Method For The Measurement Of The Thermal Resistance"

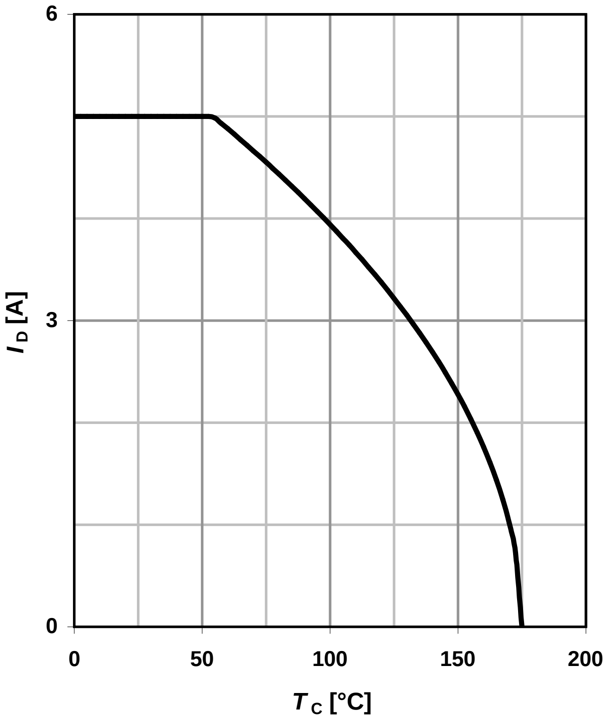
1 Power dissipation

$P_{\mathrm{tot}} = \mathrm{f}(T_{\mathrm{C}})$; $V_{\mathrm{GS}} \geq 6$ V



2 Drain current

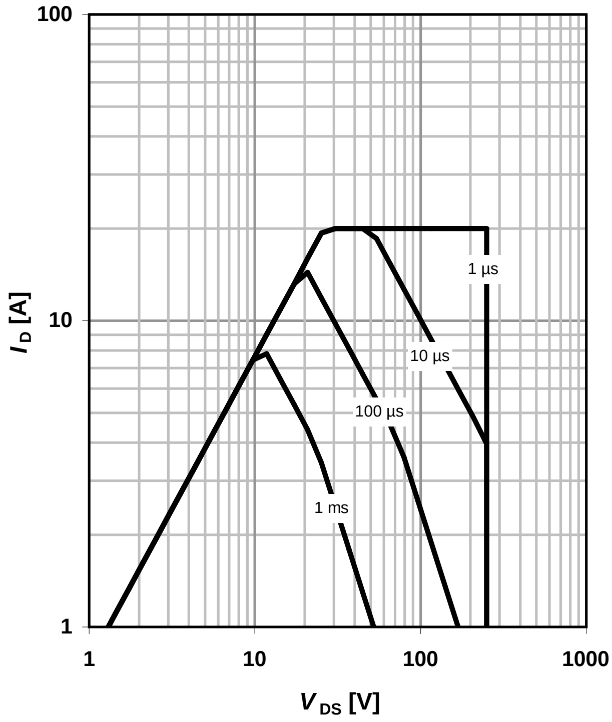
$I_{\mathrm{D}} = \mathrm{f}(T_{\mathrm{C}})$; $V_{\mathrm{GS}} \geq 6$ V



3 Safe operating area

$I_{\mathrm{D}} = \mathrm{f}(V_{\mathrm{DS}})$; $T_{\mathrm{C}} = 25$ °C; $D = 0$

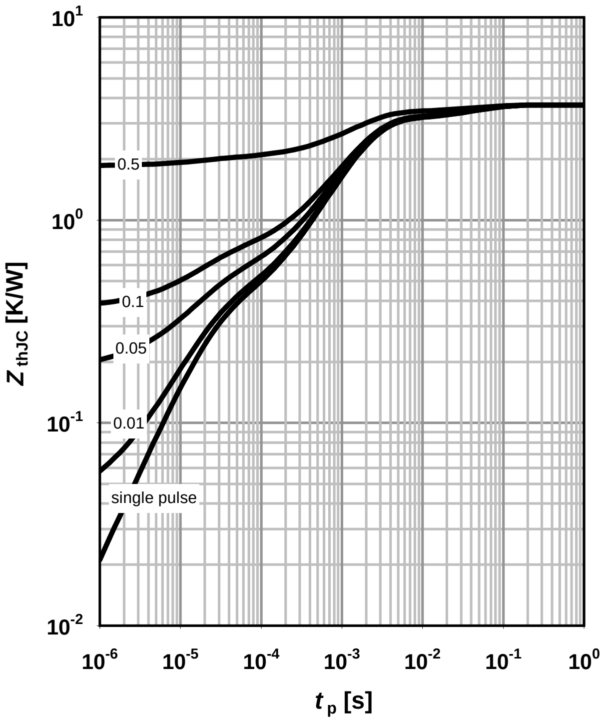
parameter: t_{p}



4 Max. transient thermal impedance

$Z_{\mathrm{thJC}} = \mathrm{f}(t_{\mathrm{p}})$

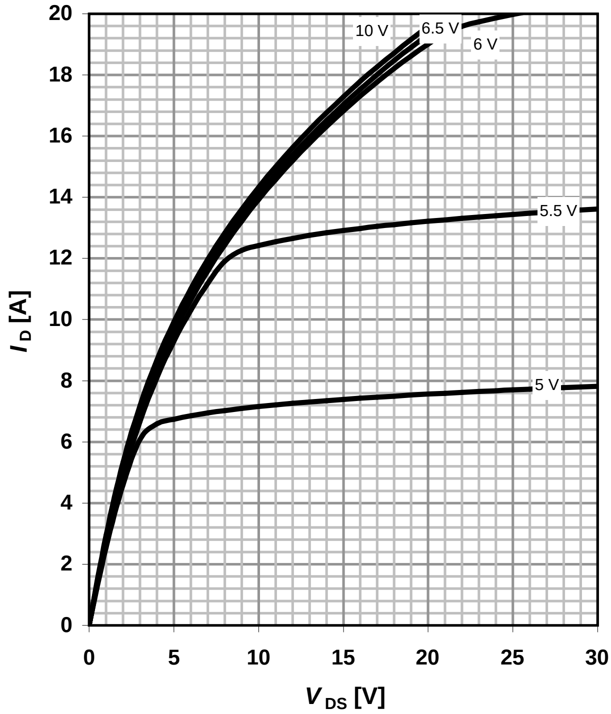
parameter: $D = t_{\mathrm{p}}/T$



5 Typ. output characteristics

$I_D = f(V_{DS})$; $T_j = 25$ °C

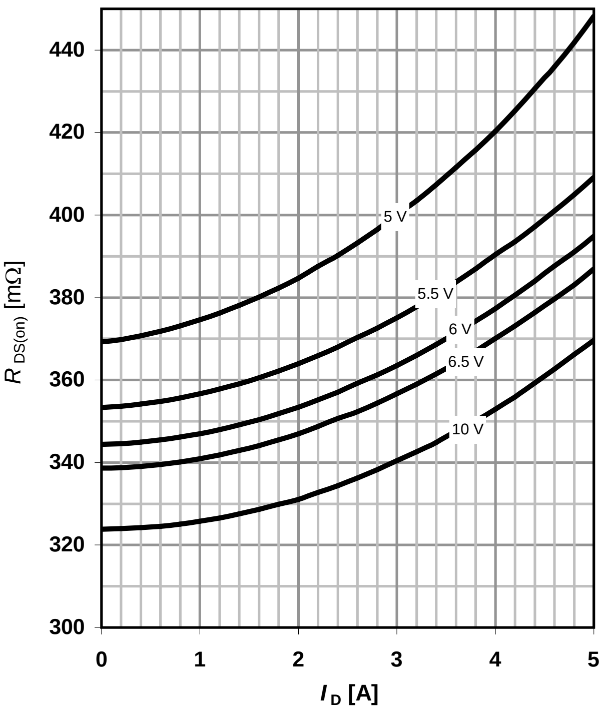
parameter: V_{GS}



6 Typ. drain-source on-state resistance

$R_{DS(on)} = f(I_D)$; $T_j = 25$ °C

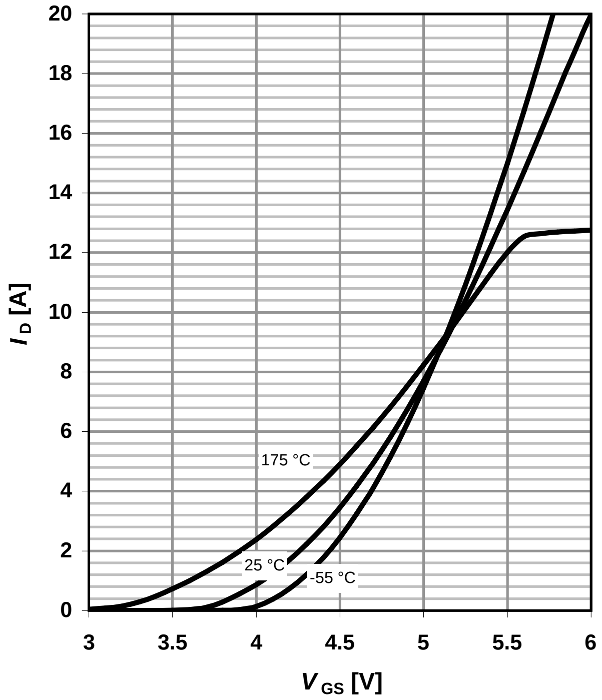
parameter: V_{GS}



7 Typ. transfer characteristics

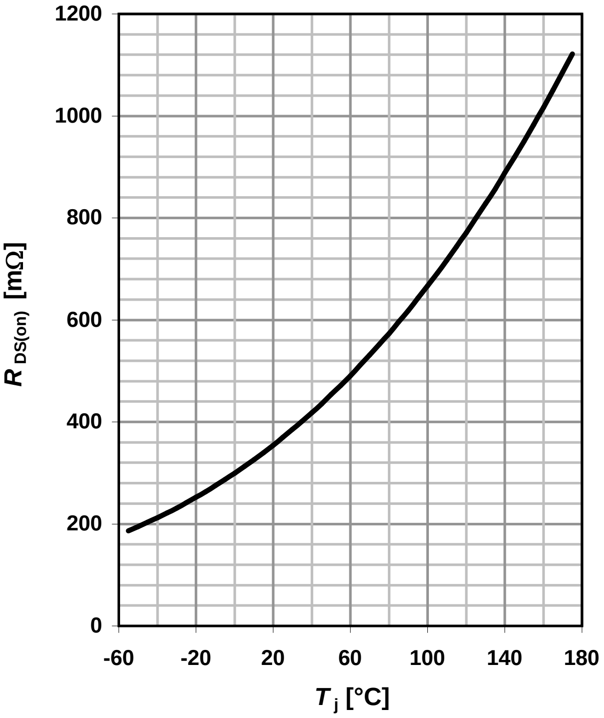
$I_D = f(V_{GS})$; $V_{DS} = 6$V

parameter: T_j



8 Typ. drain-source on-state resistance

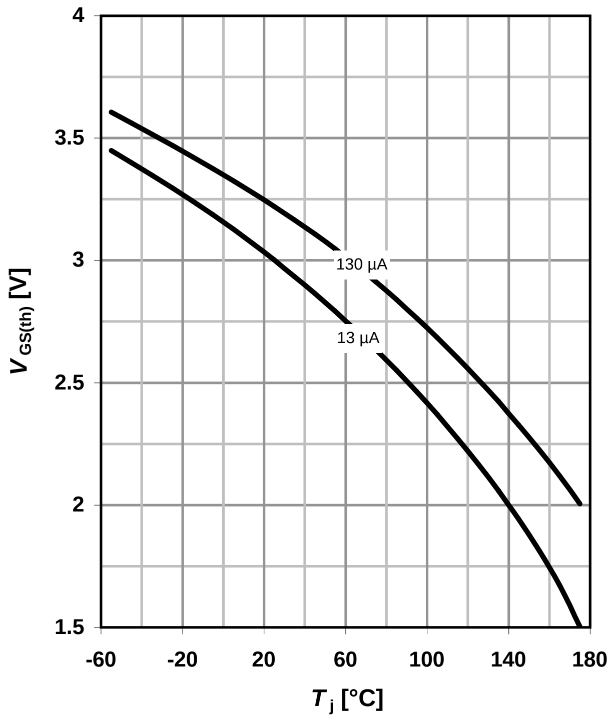
$R_{DS(on)} = f(T_j)$; $I_D = 5$ A; $V_{GS} = 10$ V



9 Typ. gate threshold voltage

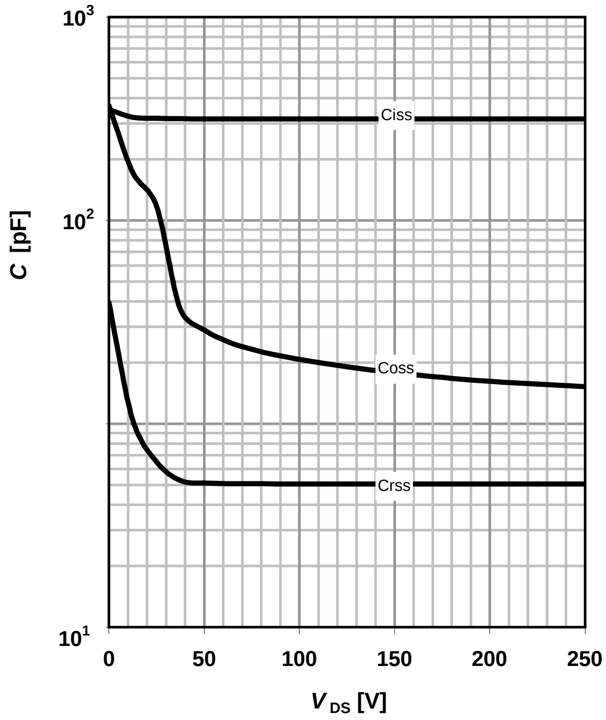
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: I_D



10 Typ. capacitances

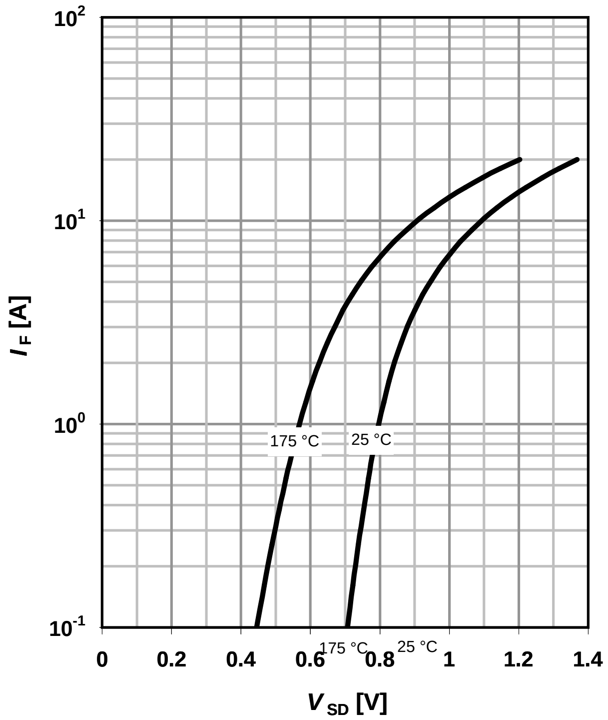
$C = f(V_{DS})$; $V_{GS} = 0$ V; $f = 1$ MHz



11 Typical forward diode characteristicis

$IF = f(V_{SD})$

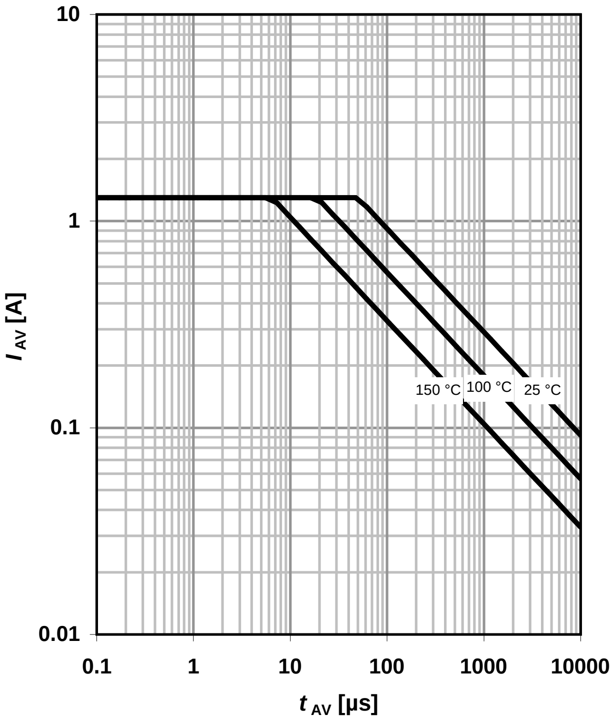
parameter: T_j



12 Avalanche characteristics

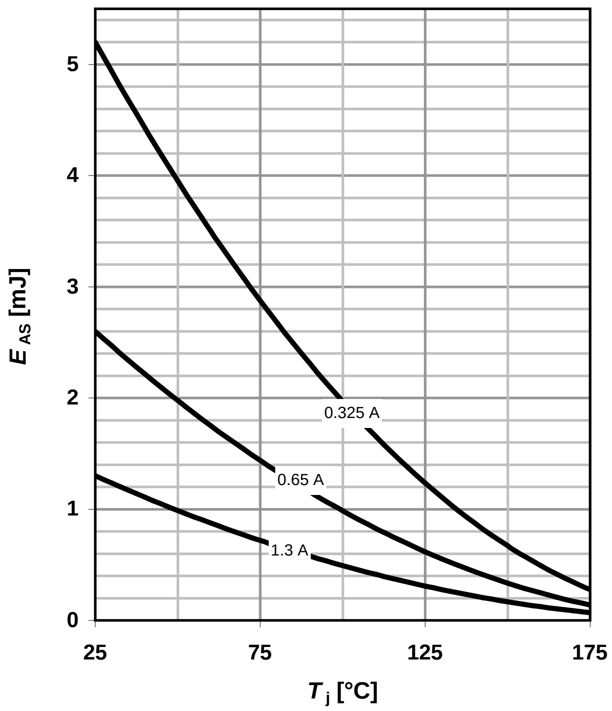
$I_{AS} = f(t_{AV})$

parameter: $T_{j(start)}$



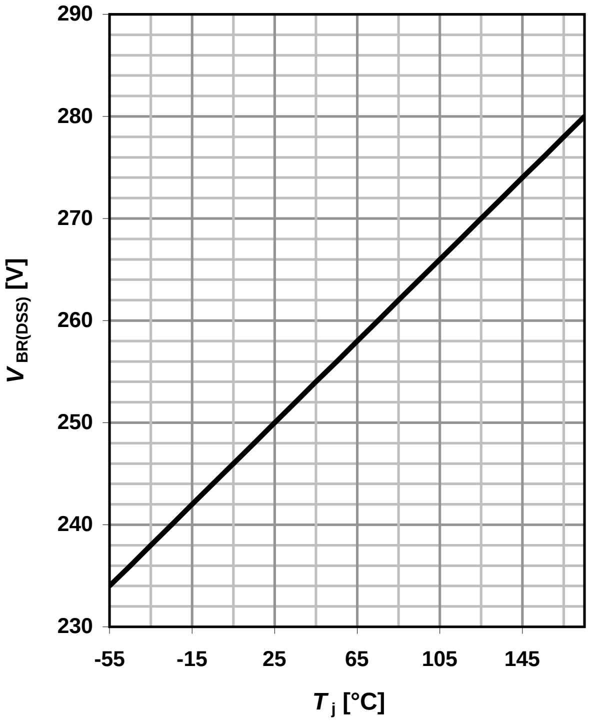
13 Avalanche energy

$E_{AS} = f(T_j)$; $I_D = 45$ A



14 Drain-source breakdown voltage

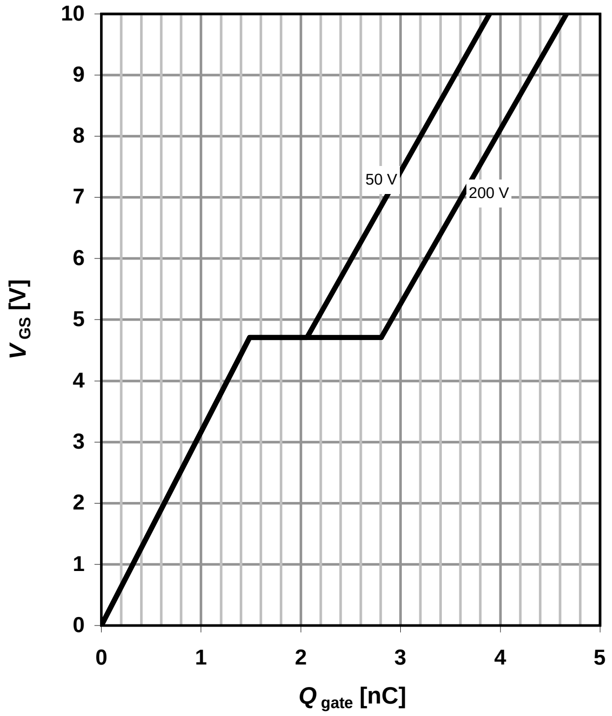
$V_{BR(DSS)} = f(T_j)$; $I_D = 1$ mA



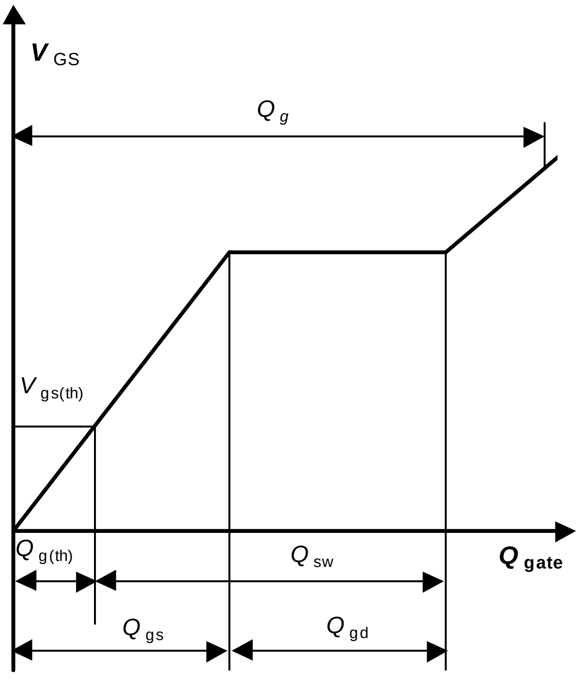
15 Typ. gate charge

$V_{GS} = f(Q_{gate})$; $I_D = 5$ A pulsed

parameter: V_{DD}



16 Gate charge waveforms



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Revision History

Version	Date	Changes
Revision 0.1	21.10.2010	Initial target data sheet
Revision 0.2	24.07.2012	Preliminary data sheet
Revision 1.0	18.10.2012	Final Data Sheet

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DCI Certification Ltd

CERTIFICATE OF INCORPORATION

I hereby certify that

DIGI ELECTRONICS HK LIMITED

is this day incorporated in Hong Kong under the Companies Ordinance (Chapter 622 of the Laws of Hong Kong), and that this company is a limited company.

Registrar of Companies
Hong Kong Special Administrative Region

ASA

MEMBERSHIP
Certificate

The Aviation Suppliers Association has enrolled as a Regular Member

DIGI ELECTRONICS HK LIMITED

Michele Dickstein
President

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