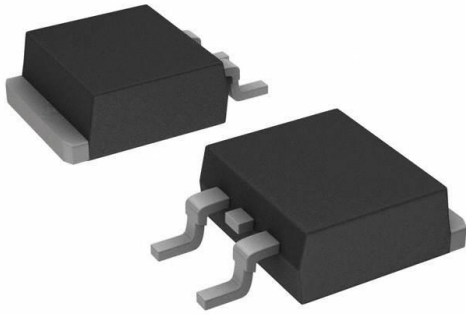


SPB18P06P Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	SPB18P06P-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	SPB18P06P
Description	MOSFET P-CH 60V 18.7A D2PAK
Detailed Description	P-Channel 60 V 18.7A (Ta) 81.1W (Ta) Surface Mount PG-TO263-3



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

SPB18P06P

Series:

SIPMOS®

FET Type:

P-Channel

Drain to Source Voltage (Vdss):

60 V

Drive Voltage (Max Rds On, Min Rds On):

10V

Vgs(th) (Max) @ Id:

4V @ 1mA

Vgs (Max):

±20V

FET Feature:

-

Operating Temperature:

-55°C ~ 175°C (Tj)

Supplier Device Package:

PG-TO263-3

Base Product Number:

SPB18P

Manufacturer:

Infineon Technologies

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

18.7A (Ta)

Rds On (Max) @ Id, Vgs:

130mOhm @ 13.2A, 10V

Gate Charge (Qg) (Max) @ Vgs:

28 nC @ 10 V

Input Capacitance (Ciss) (Max) @ Vds:

860 pF @ 25 V

Power Dissipation (Max):

81.1W (Ta)

Mounting Type:

Surface Mount

Package / Case:

TO-263-3, D2PAK (2 Leads + Tab), TO-263AB

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



SPB18P06P G

SIPMOS® Power-Transistor

Features

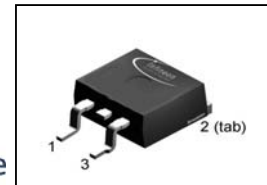
- P-Channel
- Enhancement mode
- Avalanche rated
- dv/dt rated
- 175°C operating temperature
- Pb-free lead plating; RoHS compliant
- ° Halogen-free according to IEC61249-2-21
- ° Qualified according to AEC Q101



Product Summary

V_{DS}	-60	V
$R_{DS(on),max}$	0.13	Ω
I_D	-18.6	A

PG-TO263-3



Type	Package	Tape and reel information	Marking	Lead free	Packing
SPB18P06PG	PG-TO263-3	1000 pcs / reel	18P06P	Yes	Non dry

Maximum ratings, at $T_j=25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
			steady state	
Continuous drain current	I_D	$T_A=25\text{ °C}$	-18.7	A
		$T_A=100\text{ °C}$	-13.2	
Pulsed drain current	$I_{D,pulse}$	$T_A=25\text{ °C}$	-74.8	
Avalanche energy, single pulse	E_{AS}	$I_D=18.7\text{ A}$, $R_{GS}=25\ \Omega$	151	mJ
Avalanche energy, periodic limited by $T_{j,max}$	E_{AR}		8	
Reverse diode dv/dt	dv/dt	$I_D=18.7\text{ A}$, $V_{DS}=48\text{ V}$, $di/dt=-200\text{ A}/\mu\text{s}$, $T_{j,max}=175\text{ °C}$	-6	kV/ μs
Gate source voltage	V_{GS}		± 20	V
Power dissipation	P_{tot}	$T_A=25\text{ °C}$	81.1	W
Operating and storage temperature	T_j , T_{stg}		"-55 ... +175"	$^{\circ}\text{C}$
ESD class				
Soldering temperature			260 $^{\circ}\text{C}$	
IEC climatic category; DIN IEC 68-1			55/175/56	



SPB18P06P G

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Thermal characteristics

Thermal resistance, junction - case	R_{thJC}		-	-	1.85	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}		-	-	62	
SMD version, device on PCB:	R_{thJA}	minimal footprint	-	-	62	K/W
		6 cm ² cooling area ¹⁾	-	-	40	

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

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{ V}, I_D=-250\text{ }\mu\text{A}$	-60	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-1000\text{ }\mu\text{A}$	-2.1	3	-4	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-60\text{ V}, V_{GS}=0\text{ V}, T_j=25\text{ }^\circ\text{C}$	-	-0.1	-1	μA
		$V_{DS}=-60\text{ V}, V_{GS}=0\text{ V}, T_j=150\text{ }^\circ\text{C}$	-	-10	-100	
Gate-source leakage current	I_{GSS}	$V_{GS}=-20\text{ V}, V_{DS}=0\text{ V}$	-	-10	-100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=-10\text{ V}, I_D=-13.2\text{ A}$	-	101	130	m Ω
Transconductance	g_{fs}	$ V_{DS} >2 I_D R_{DS(on)max}, I_D=-13.2\text{ A}$	5	10	-	S

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



SPB18P06P G

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Dynamic characteristics

Input capacitance	C_{iss}	$V_{GS}=0\text{ V}, V_{DS}=-25\text{ V},$ $f=1\text{ MHz}$	-	690	860	pF
Output capacitance	C_{oss}		-	230	290	
Reverse transfer capacitance	C_{rss}		-	95	120	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=-30\text{ V}, V_{GS}=-$ $10\text{ V}, I_D=-13.2\text{ A},$ $R_G=2.7\ \Omega$	-	12	18	ns
Rise time	t_r		-	5.8	8.7	
Turn-off delay time	$t_{d(off)}$		-	25	37	
Fall time	t_f		-	11	16.5	

Gate Charge Characteristics

Gate to source charge	Q_{gs}	$V_{DD}=-48\text{ V}, I_D=-$ $18.6\text{ A}, V_{GS}=0\text{ to }-10\text{ V}$	-	-4.1	-5.5	nC
Gate to drain charge	Q_{gd}		-	-11	-17	
Gate charge total	Q_g		-	-21	-28	
Gate plateau voltage	$V_{plateau}$		-	-5.94	-	V

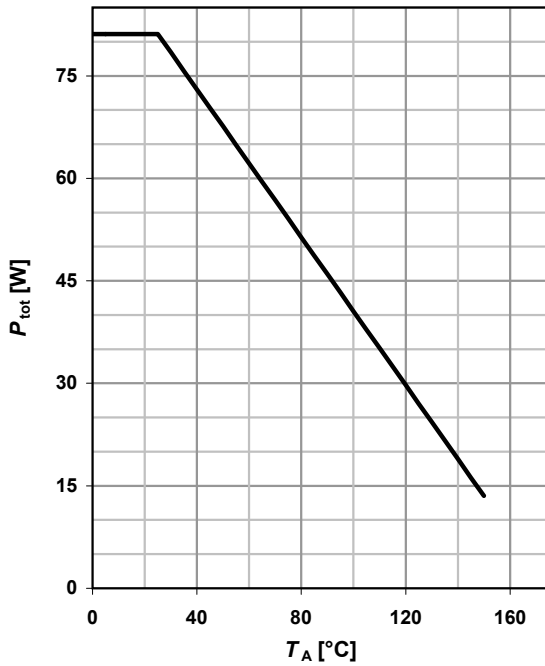
Reverse Diode

Diode continuous forward current	I_S	$T_A=25\text{ }^\circ\text{C}$	-	-	-18.6	A
Diode pulse current	$I_{S,pulse}$		-	-	-74.8	
Diode forward voltage	V_{SD}	$V_{GS}=0\text{ V}, I_F=18.6\text{ A},$ $T_j=25\text{ }^\circ\text{C}$	-	-0.99	-1.33	V
Reverse recovery time	t_{rr}	$V_R=30\text{ V}, I_F= I_S ,$ $di_F/dt=100\text{ A}/\mu\text{s}$	-	70	105	ns
Reverse recovery charge	Q_{rr}		-	139	208	nC



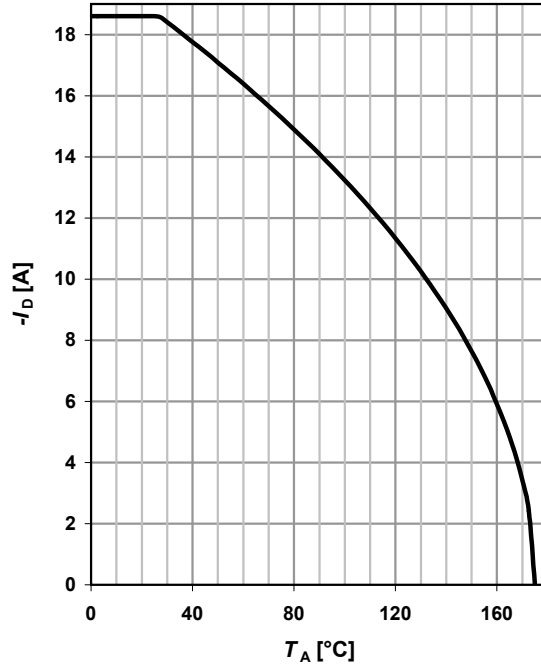
1 Power dissipation

$P_{tot}=f(T_A)$



2 Drain current

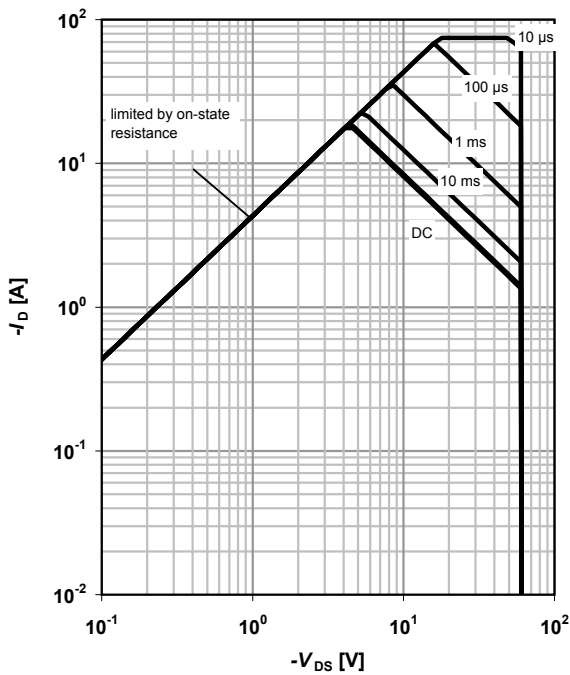
$I_D=f(T_A); |V_{GS}| \geq 10\text{ V}$



3 Safe operating area

$I_D=f(V_{DS}); T_A=25\text{ °C}; D=0$

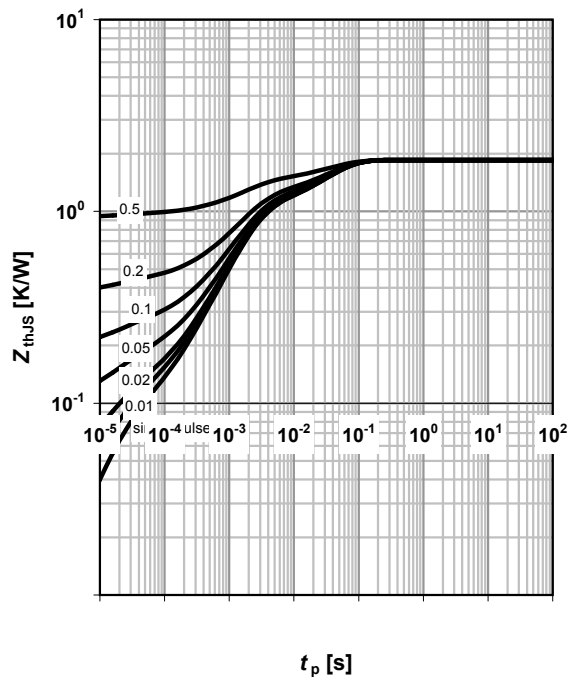
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJA}=f(t_p)$

parameter: $D=t_p/T$

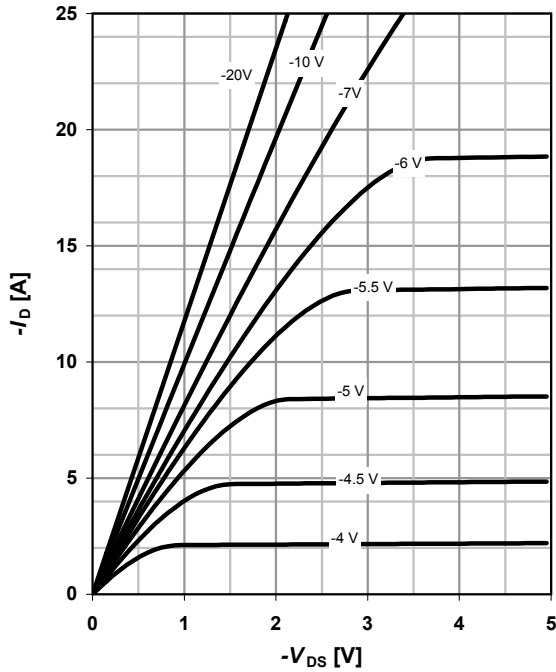




5 Typ. output characteristics

$I_D = f(V_{DS}); T_j = 25\text{ }^\circ\text{C}$

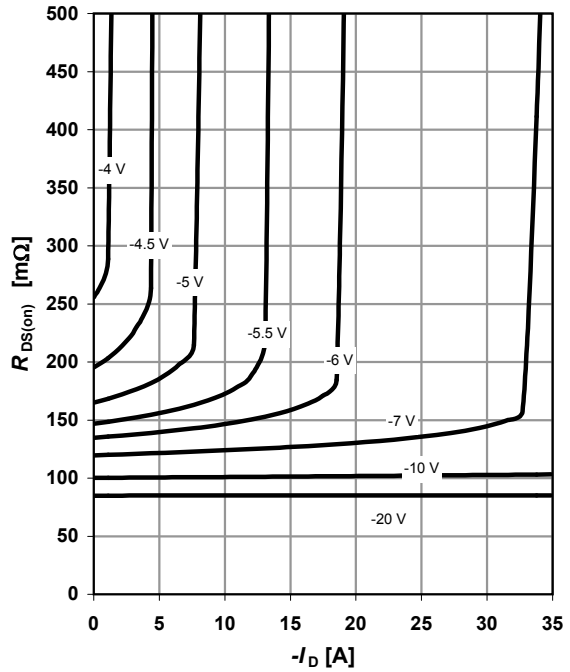
parameter: V_{GS}



6 Typ. drain-source on resistance

$R_{DS(on)} = f(I_D); T_j = 25\text{ }^\circ\text{C}$

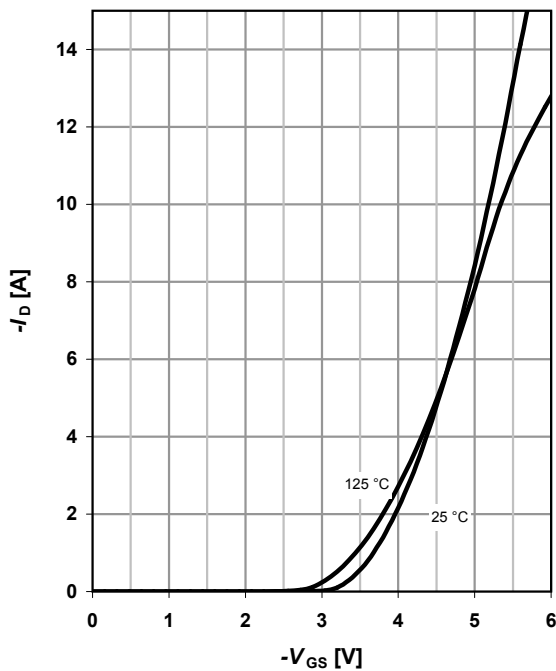
parameter: V_{GS}



7 Typ. transfer characteristics

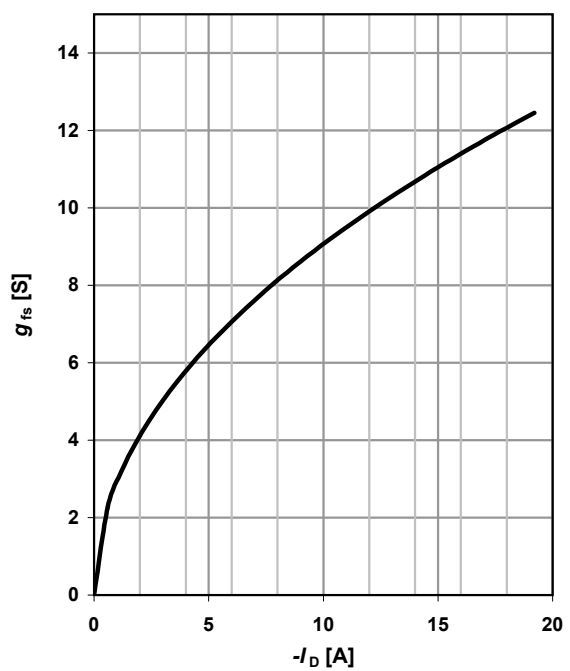
$I_D = f(V_{GS}); |V_{DS}| > 2|I_D|R_{DS(on)max}$

parameter: T_j



8 Typ. forward transconductance

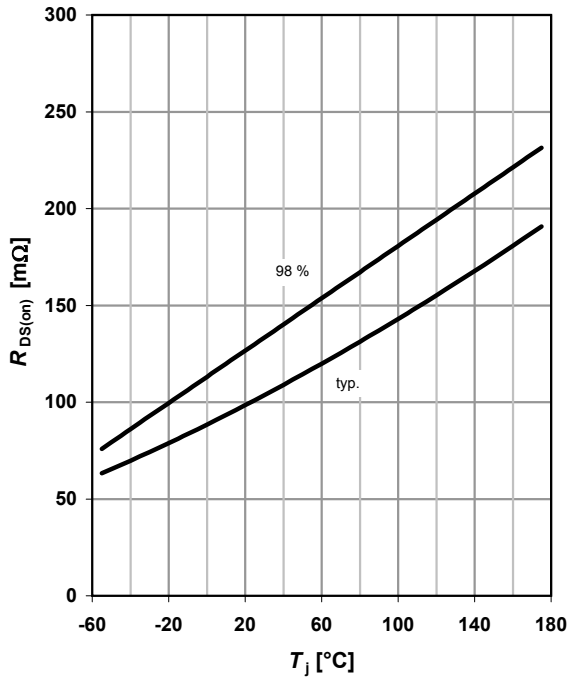
$g_{fs} = f(I_D); T_j = 25\text{ }^\circ\text{C}$





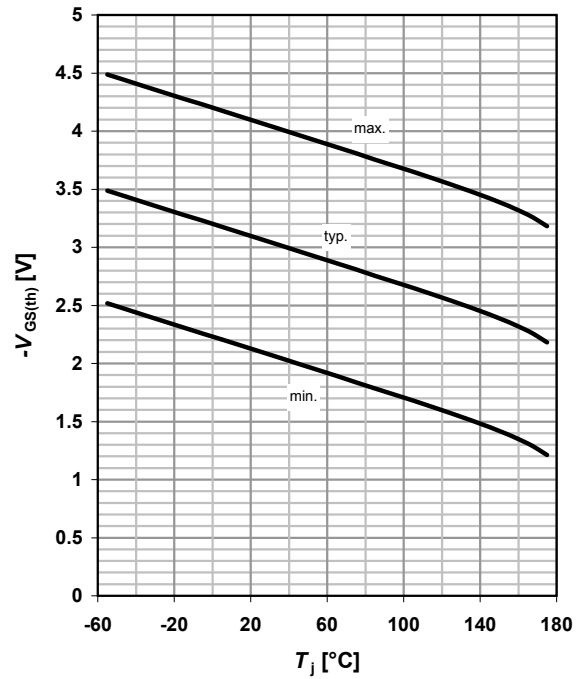
9 Drain-source on-state resistance

$R_{DS(on)} = f(T_j); I_D = -13.2 \text{ A}; V_{GS} = -10 \text{ V}$



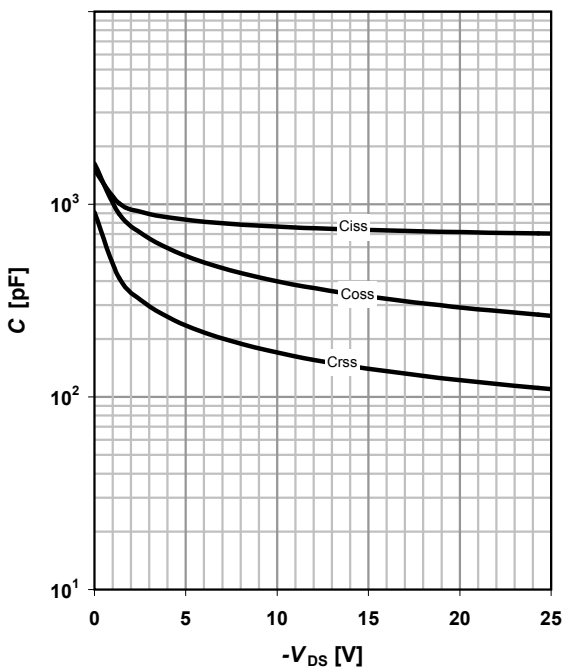
10 Typ. gate threshold voltage

$V_{GS(th)} = f(T_j); V_{GS} = V_{DS}; I_D = -1000 \mu\text{A}$



11 Typ. capacitances

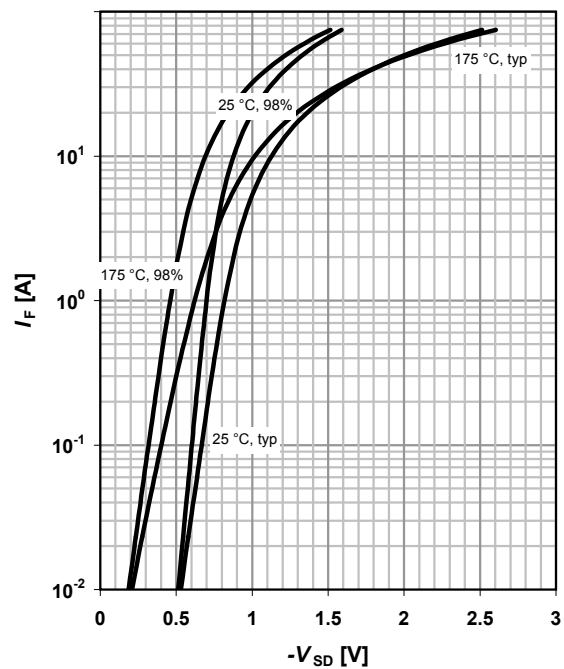
$C = f(V_{DS}); V_{GS} = 0 \text{ V}; f = 1 \text{ MHz}$



12 Forward characteristics of reverse diode

$I_F = f(V_{SD})$

parameter: T_j

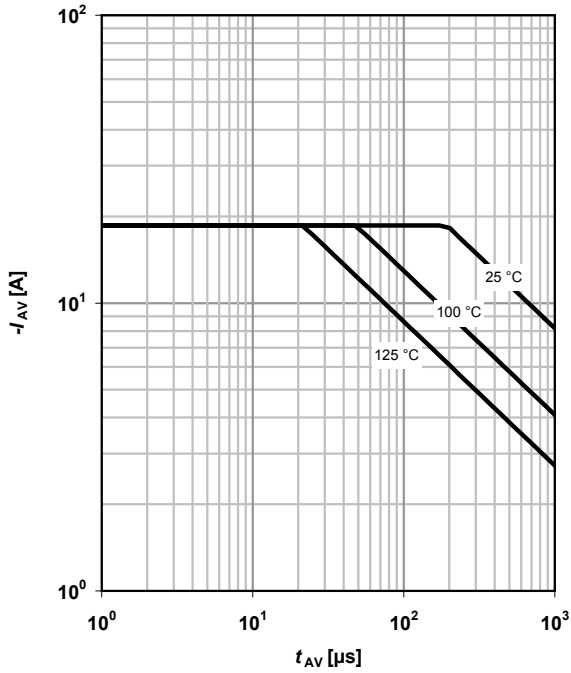




13 Avalanche characteristics

$I_{AS}=f(t_{AV}); R_{GS}=25 \Omega$

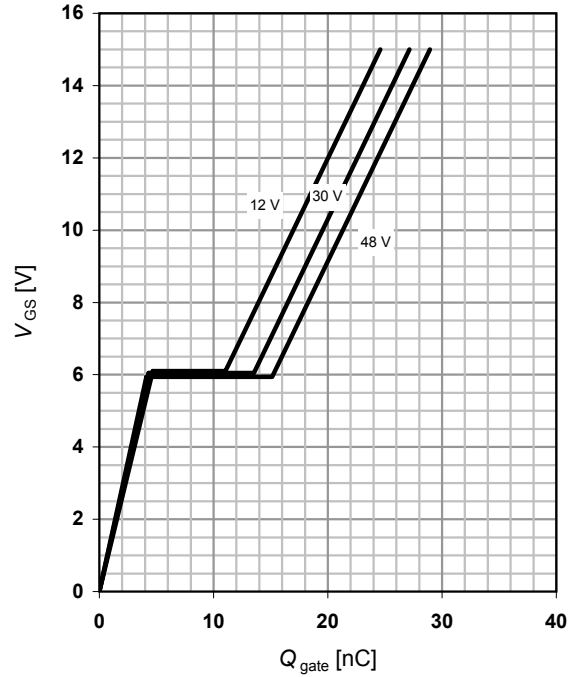
parameter: $T_{j(start)}$



14 Typ. gate charge

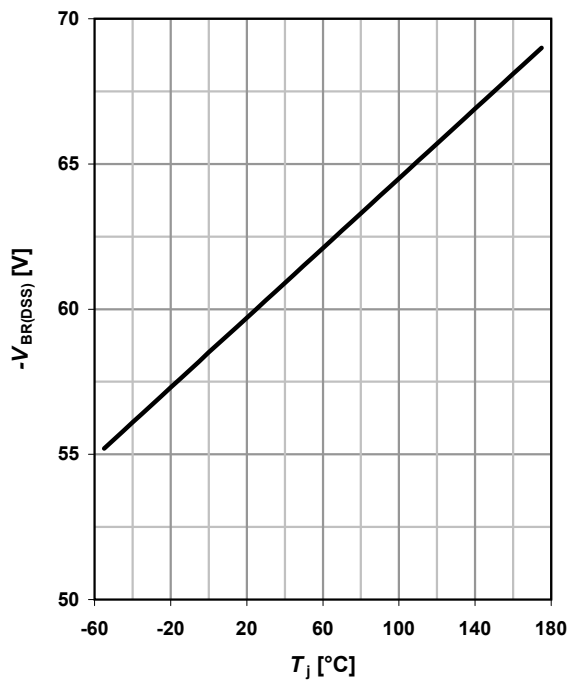
$V_{GS}=f(Q_{gate}); I_D=-18.6 \text{ A pulsed}$

parameter: V_{DD}



15 Drain-source breakdown voltage

$V_{BR(DSS)}=f(T_j); I_D=-250 \mu A$





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