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Infineon Technologies
IPD068P03L3 G

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OptiMOS™ P3 Power-Transistor

Features

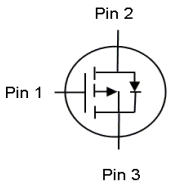
- single P-Channel in DPAK
- Qualified according JEDEC[1)] for target applications
- 175 °C operating temperature
- 100% Avalanche tested
- Pb-free; RoHS compliant, halogen free
- applications: power management
- Halogen-free according to IEC61249-2-21

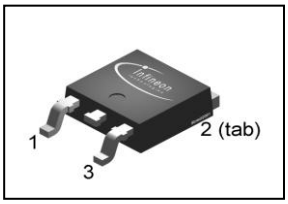
RoHS Halogen-Free

Product Summary

V_{DS}		-30	V
$R_{DS(on),max}$	V_{GS} = *10V*	6.8	mΩ
	V_{GS} = *4.5V*	11.0	
I_D		-70	A

PG-TO252-3





Type	Package	Marking	Lead free	Packing
IPD068P03L3 G	PG-TO252-3	068P03L	Yes	non dry

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_C=25 °C	-70	A
		T_C=100 °C	-70	
Pulsed drain current	$I_{D,pulse}$	T_C=25 °C[2)]	-280	
Avalanche energy, single pulse	E_{AS}	I_D=-70 A, R_{GS}=25 Ω	149	mJ
Gate source voltage	V_{GS}		±20	V
Power dissipation	P_{tot}	T_C=25 °C	100	W
Operating and storage temperature	T_j, T_{stg}		-55 ... 175	°C
ESD class		JESD22-A114 HBM	tbd	
Soldering temperature			260	°C
IEC climatic category; DIN IEC 68-1			55/175/56	

[1)] J-STD20 and JESD22

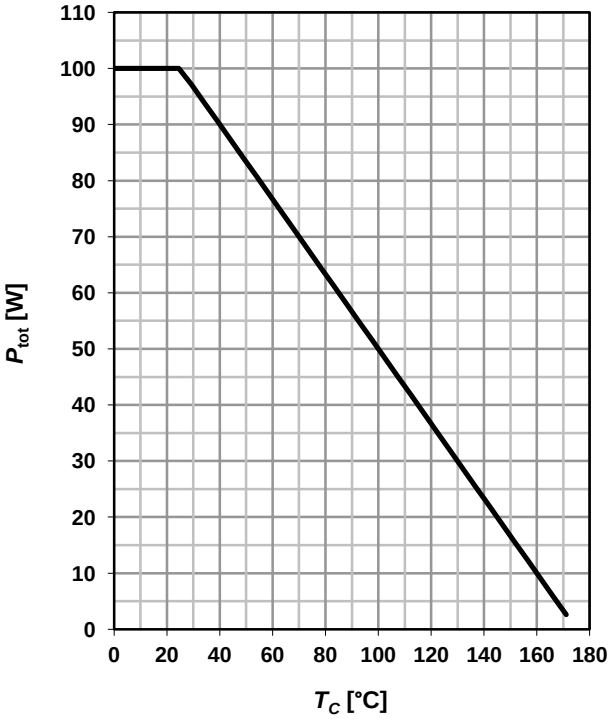
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - case	R_{thJC}		-	-	1.5	K/W
Thermal resistance, junction - ambient	R_{thJA}	6 cm^2 cooling area[2)]	-	-	50	
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=-250µA	-30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-150 µA	-1.0	-1.5	-2.0	
Zero gate voltage drain current	I_{DSS}	V_{DS}=-30 V, V_{GS}=0 V, T_j=25 °C	-	-0.1	-1	µA
		V_{DS}=-30 V, V_{GS}=0 V, T_j=150 °C	-	-10	-100	
Gate-source leakage current	I_{GSS}	V_{GS}=-20 V, V_{DS}=0 V	-	-10	-100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=-4.5 V, I_D=-45 A	-	7.0	11.0	mΩ
		V_{GS}=-10 V, I_D=-70 A	-	5.0	6.8	
Gate resistance	R_G		-	5.8	-	Ω
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=-70 A	50	100	-	S

[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.

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=-15 V, f=1 MHz	-	5150	7720	pF
Output capacitance	C_{oss}		-	2090	3140	
Reverse transfer capacitance	C_{rss}		-	160	240	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-15 V, V_{GS}=-10 V, I_D=-70 A, $R_{G,ext}$=6 Ω	-	11	16.5	ns
Rise time	t_r		-	100	150	
Turn-off delay time	$t_{d(off)}$		-	84	126	
Fall time	t_f		-	31	47	
Gate Charge Characteristics[3)]						
Gate to source charge	Q_{gs}	V_{DD}=-15 V, I_D=-70 A, V_{GS}=0 to -10 V	-	19	25	nC
Gate charge at threshold	$Q_{g(th)}$		-	8	11	
Gate to drain charge	Q_{gd}		-	8	13	
Switching charge	Q_{sw}		-	19	27	
Gate charge total	Q_g		-	68	91	
Gate plateau voltage	$V_{plateau}$		-	3.7	-	V
Output charge	Q_{oss}	V_{DD}=-15 V, V_{GS}=0 V	-	48	64	nC
Reverse Diode						
Diode continous forward current	I_S	T_C=25 °C	-	-	30	A
Diode pulse current	$I_{S,pulse}$		-	-	280	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=-70 A, T_j=25 °C	-	-	-1.2	V
Reverse recovery time	t_{rr}	V_R=15 V, I_F=-70 A, di_F/dt=100 A/µs	-	46	69	ns
Reverse recovery charge	Q_{rr}		-	44	-	nC

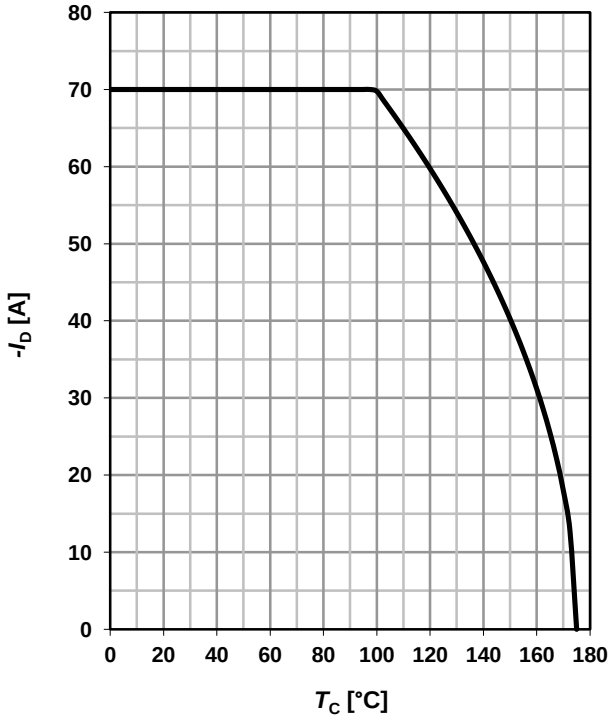
1 Power dissipation

$P_{tot}=f(T_C)$



2 Drain current

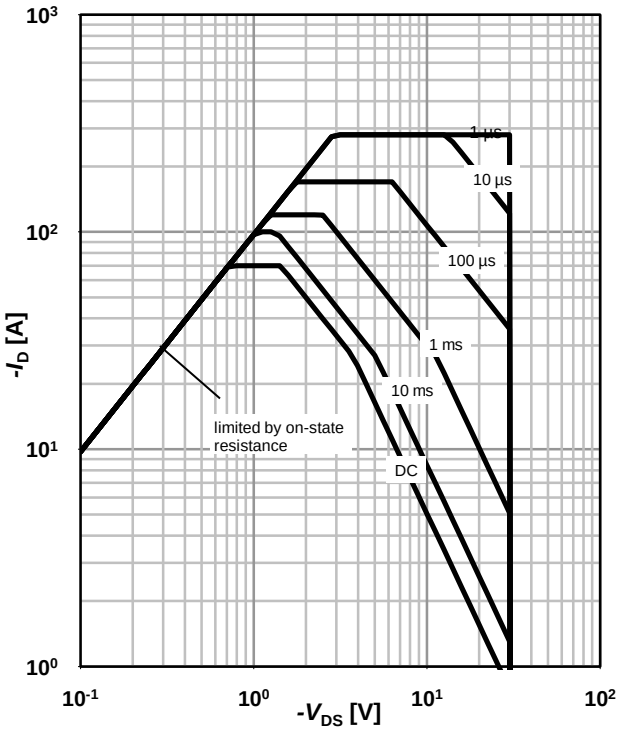
$I_D=f(T_C)$; $|V_{GS}|\geq 10$ V



3 Safe operating area

$I_D=f(V_{DS})$; $T_C=25$ °C[1)]; $D=0$

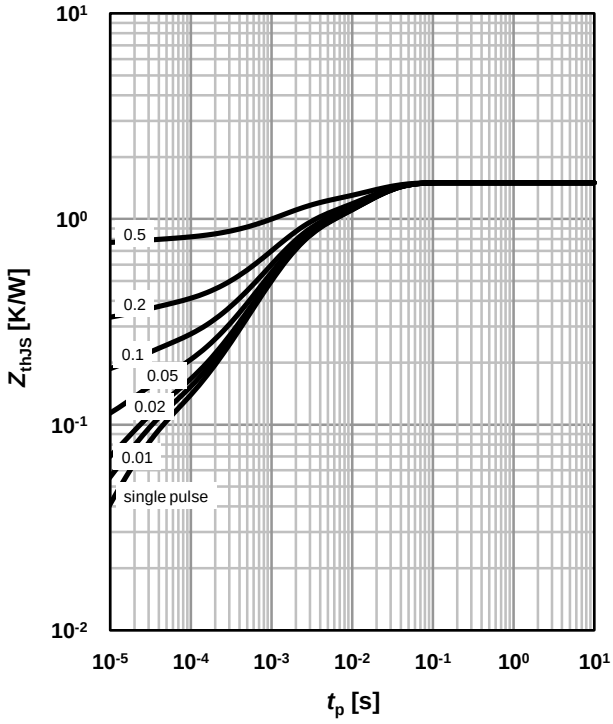
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJS}=f(t_p)$

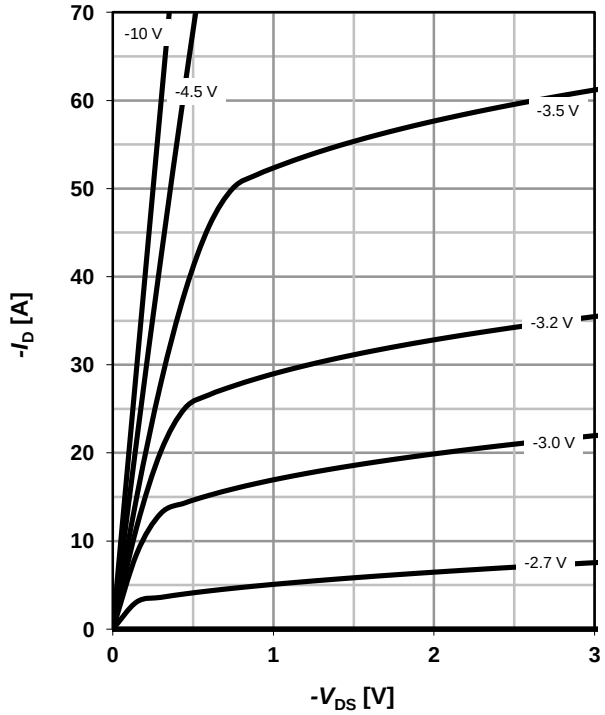
parameter: $D=t_p/T$



5 Typ. output characteristics

$I_D=f(V_{DS})$; $T_j=25$ °C

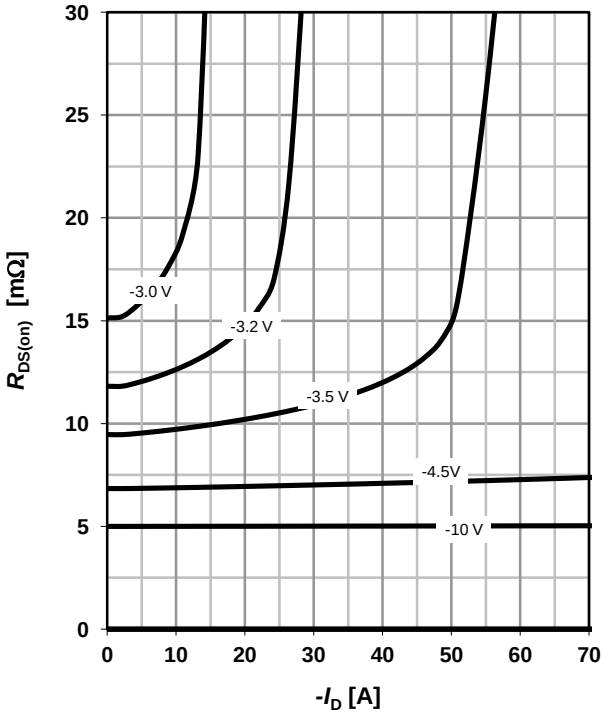
parameter: V_{GS}



6 Typ. drain-source on resistance

$R_{DS(on)}=f(I_D)$; $T_j=25$ °C

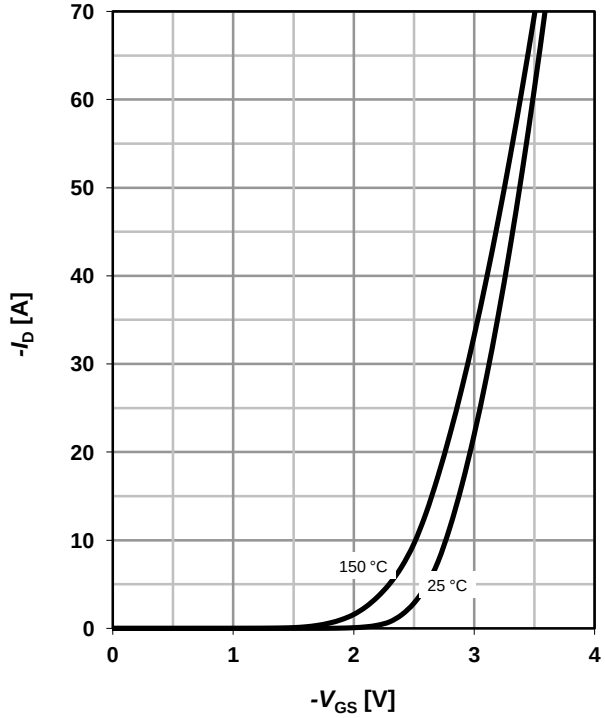
parameter: V_{GS}



7 Typ. transfer characteristics

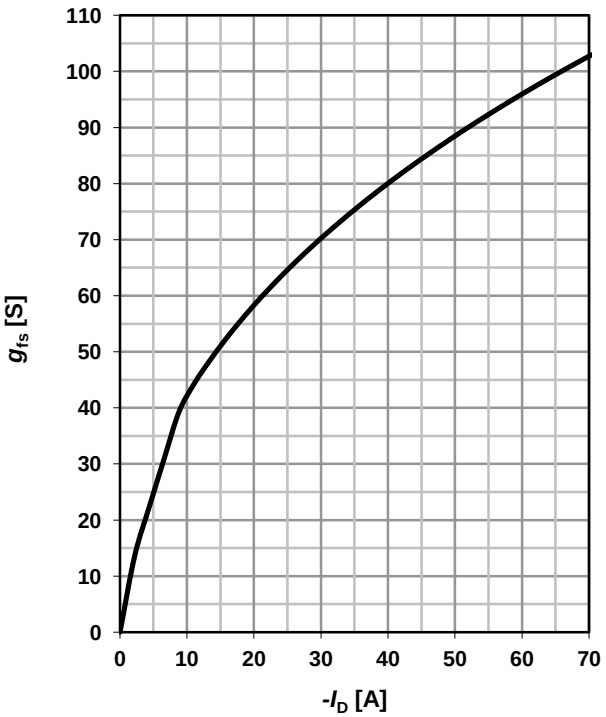
$I_D=f(V_{GS})$; $|V_{DS}|>2|I_D|R_{DS(on)max}$

parameter: T_j



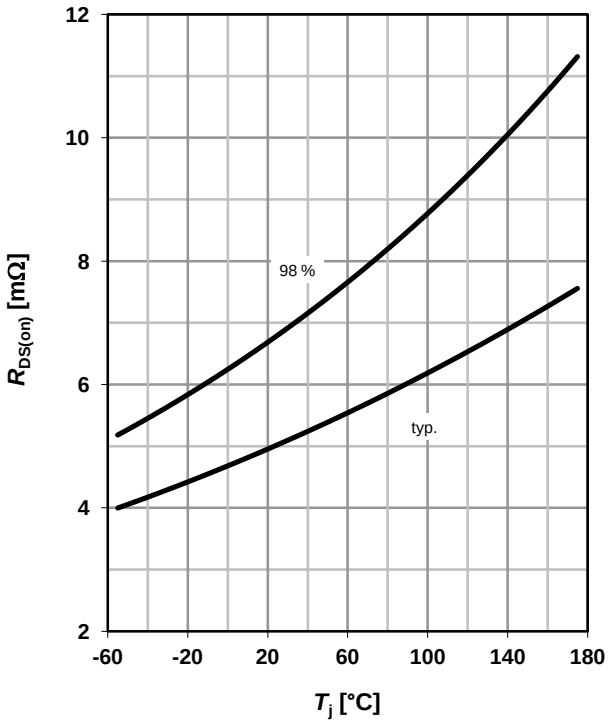
8 Typ. forward transconductance

$g_{fs}=f(I_D)$; $T_j=25$ °C



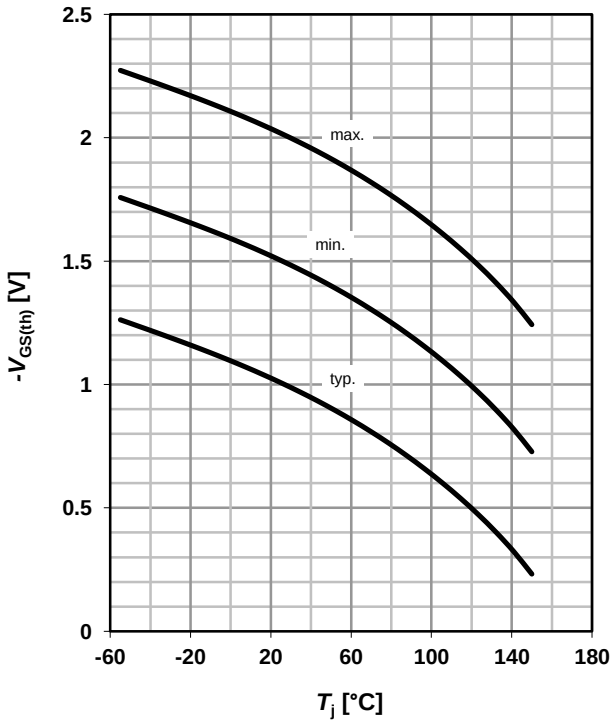
9 Drain-source on-state resistance

$R_{DS(on)}=f(T_j)$; I_D=-70 A; V_{GS}=-10 V



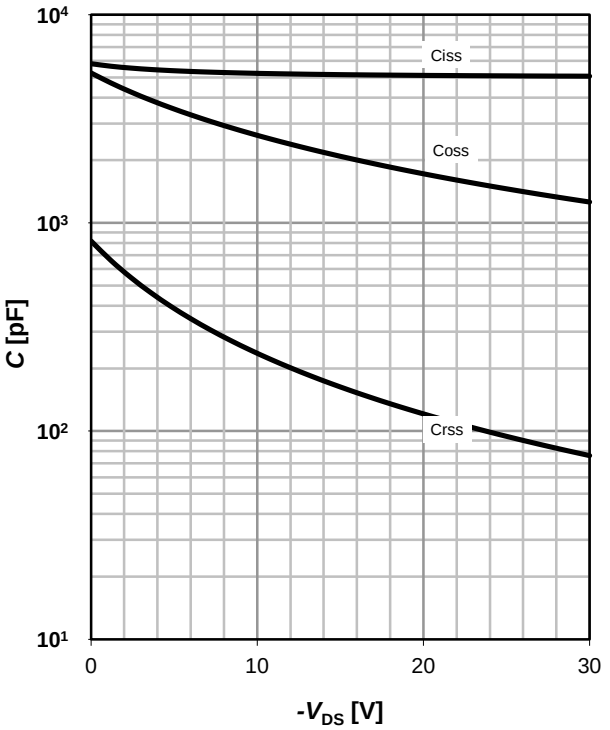
10 Typ. gate threshold voltage

$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; I_D=-150 µA



11 Typ. capacitances

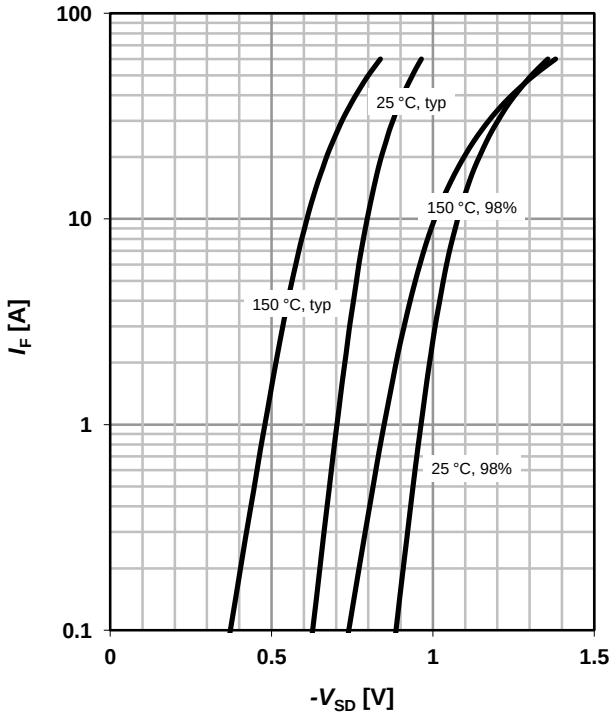
$C=f(V_{DS})$; V_{GS}=0 V; f=1 MHz



12 Forward characteristics of reverse diode

$I_F=f(V_{SD})$

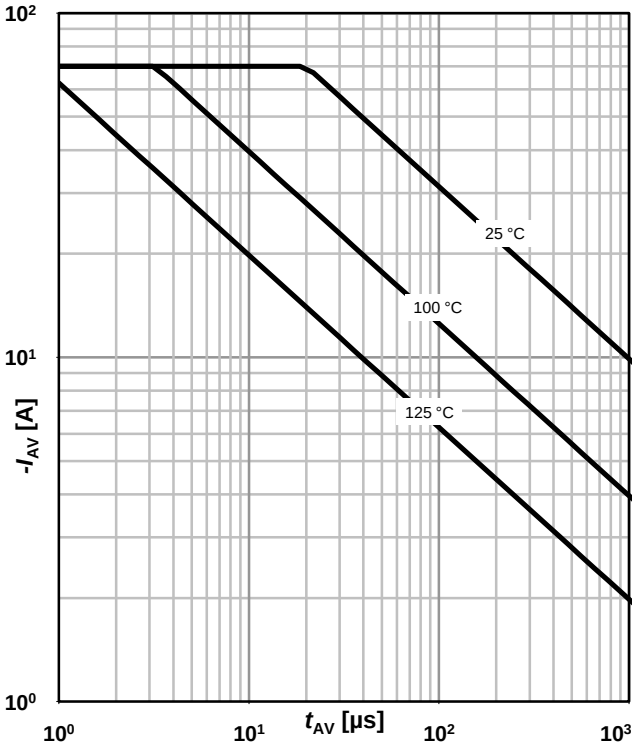
parameter: T_j



13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

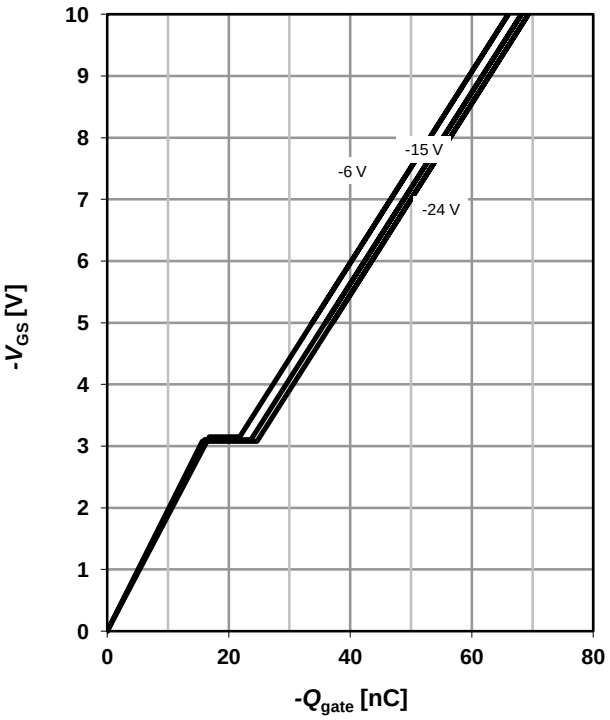
parameter: $T_{j(start)}$



14 Typ. gate charge

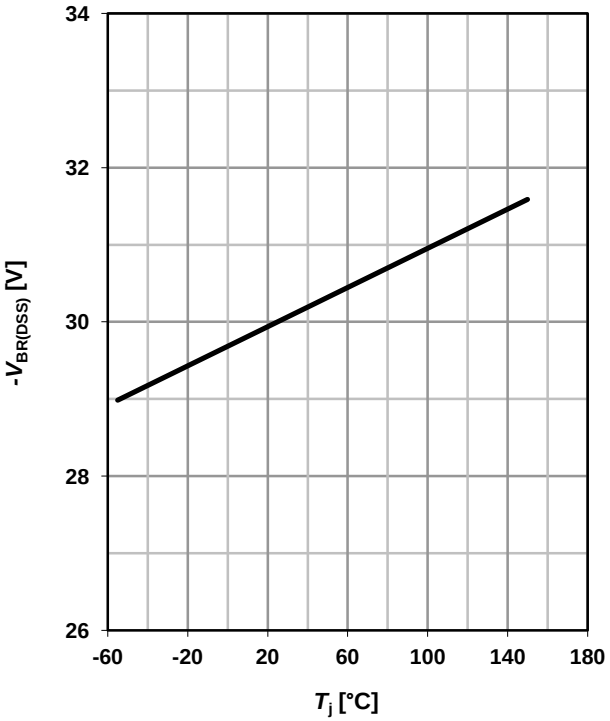
V_{GS}=f(Q_{gate}); I_D=-70 A pulsed

parameter: V_{DD}

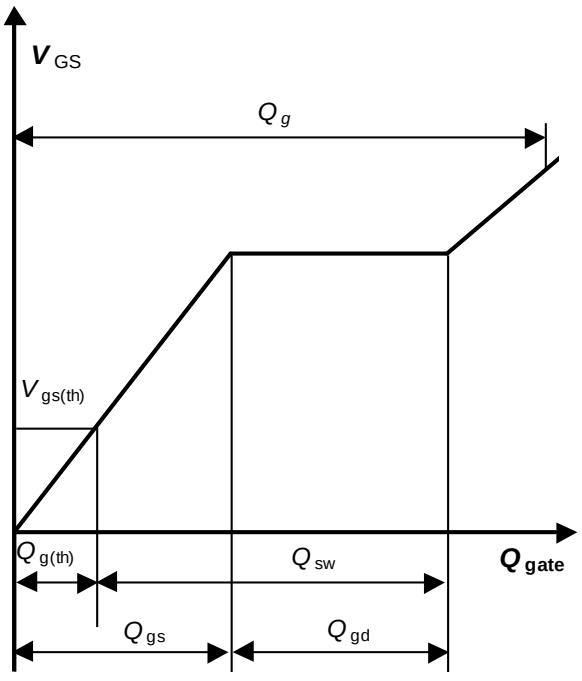


15 Drain-source breakdown voltage

$V_{BR(DSS)}$=f(T_j); I_D=-250 µA

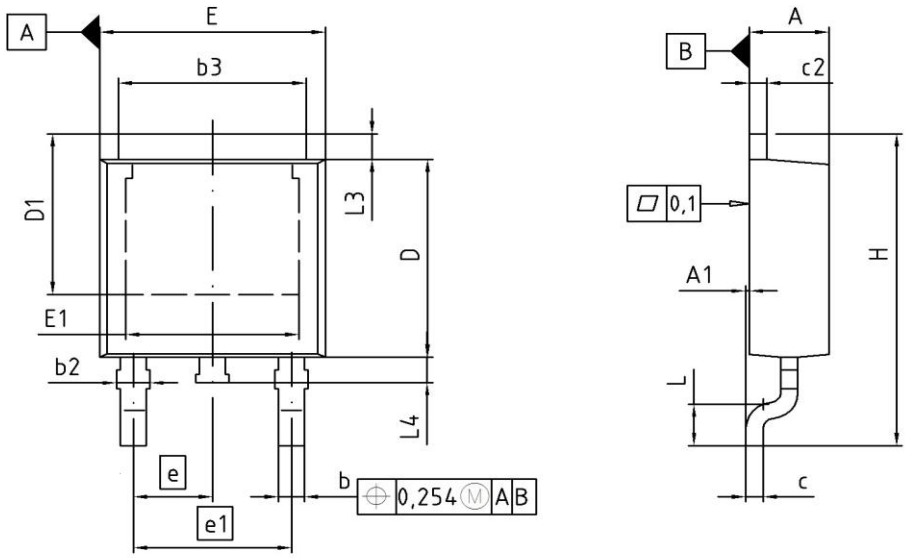


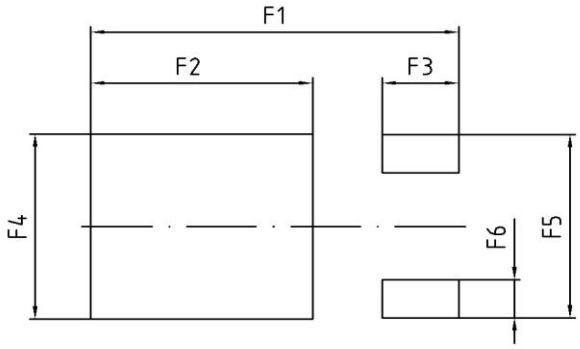
16 Gate charge waveforms



Package Outline

PG-TO252-3





DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.16	2.41	0.085	0.095
A1	0.00	0.15	0.000	0.006
b	0.64	0.89	0.025	0.035
b2	0.65	1.15	0.026	0.045
b3	5.00	5.50	0.197	0.217
c	0.46	0.60	0.018	0.024
c2	0.46	0.98	0.018	0.039
D	5.97	6.22	0.235	0.245
D1	5.02	5.84	0.198	0.230
E	6.40	6.73	0.252	0.265
E1	4.70	5.21	0.185	0.205
e	2.29		0.090	
e1	4.57		0.180	
N	3		3	
H	9.40	10.48	0.370	0.413
L	1.18	1.70	0.046	0.067
L3	0.90	1.25	0.035	0.049
L4	0.51	1.00	0.020	0.039
F1	10.50	10.70	0.413	0.421
F2	6.30	6.50	0.248	0.256
F3	2.10	2.30	0.083	0.091
F4	5.70	5.90	0.224	0.232
F5	5.66	5.86	0.223	0.231
F6	1.10	1.30	0.043	0.051

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SCALE
0
2.0
0 2.0
4mm

EUROPEAN PROJECTION

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