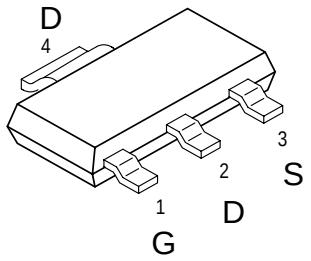
-60V P-Channel MOSFET

Description

- P-Channel
- Enhancement mode
- Avalanche rated
- Logic Level
- dv/dt rated
- Pb-free lead plating; RoHS compliant



Features

V_{DS} (V) = -60V
I_D = -1.17A (V_{GS} = -10V)
$R_{DS(ON)}$ < 60mΩ (V_{GS} = -10V)
$R_{DS(ON)}$ < 95mΩ (V_{GS} = -4.5V)

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

Parameter	Symbol	Value	Unit
Continuous drain current T_A = 25 °C T_A = 70 °C	ID	 -1.17 -0.94	A
Pulsed drain current T_A = 25 °C	ID_{puls}	-4.68	
Avalanche energy, single pulse I_D = -1.17 A , V_{DD} = -25 V, R_{GS} = 25 Ω	E_{AS}	24	mJ
Avalanche energy, periodic limited by T_{jmax}	E_{AR}	0.18	
Reverse diode dv/dt I_S = -1.17 A, V_{DS} = -48 V, di/dt = 200 A/µs, T_{jmax} = 150 °C	dv/dt	6	kV/µs
Gate source voltage	V_{GS}	±20	V
Power dissipation T_A = 25 °C	P_{tot}	1.8	W
Operating and storage temperature	T_j , T_{stg}	-55...+150	°C
IEC climatic category; DIN IEC 68-1		55/150/56	
ESD Class; JESD22-A114-HBM		Class 0	

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - soldering point (Pin 4)	R_{thJS}			25	K/W
SMD version, device on PCB: @ min. footprint @ 6 cm^2 cooling area [1)]	R_{thJA}			 115 70	K/W

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage V_{GS} = 0 V, I_D = -250 µA	$V_{(BR)DSS}$	-60			V
Gate threshold voltage, V_{GS} = V_{DS} I_D = -160 µA	$V_{GS(th)}$	-1	-1.5	-2	
Zero gate voltage drain current V_{DS} = -60 V, V_{GS} = 0 V, T_j = 25 °C V_{DS} = -60 V, V_{GS} = 0 V, T_j = 125 °C	I_{DSS}		 -0.1 -10	 -1 -100	µA
Gate-source leakage current V_{GS} = -20 V, V_{DS} = 0 V	I_{GSS}		-10	-100	nA
Drain-Source on-state resistance V_{GS} = -4.5 V, I_D = -0.89 A	$R_{DS(on)}$			60	mΩ
Drain-Source on-state resistance V_{GS} = -10 V, I_D = -1.17 A	$R_{DS(on)}$			95	mΩ

Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm^2 (one layer, 70 µm thick) copper area for drain connection.

PCB is vertical without blown air.

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geqslant 2*I_D*R_{DS(on)max}$, I_D = -0.89 A	g_{fs}	0.7	1.4		S
Input capacitance V_{GS} = 0 V, V_{DS} = -25 V, f = 1 MHz	C_{iss}		130	160	pF
Output capacitance V_{GS} = 0 V, V_{DS} = -25 V, f = 1 MHz	C_{oss}		40	50	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = -25 V, f = 1 MHz	C_{rss}		17	21	
Turn-on delay time V_{DD} = -30 V, V_{GS} = -4.5 V, I_D = -0.89 A, R_G = 18Ω	$t_{d(on)}$		24	36	ns
Rise time V_{DD} = -30 V, V_{GS} = -4.5 V, I_D = -0.89 A, R_G = 18Ω	t_r		9	14	
Turn-off delay time V_{DD} = -30 V, V_{GS} = -4.5 V, I_D = -0.89 A, R_G = 18Ω	$t_{d(off)}$		32	48	
Fall time V_{DD} = -30 V, V_{GS} = -4.5 V, I_D = -0.89 A, R_G = 18Ω	t_f		19	28	

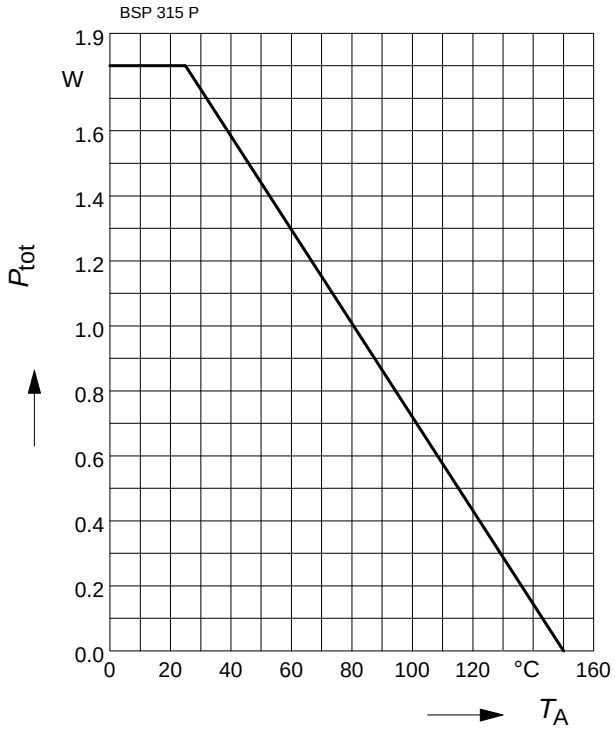
Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Gate to source charge V_{DD} = -48 V, I_D = -1.17 A	Q_{gs}		0.7	1.1	nC
Gate to drain charge V_{DD} = -48 V, I_D = -1.17 A	Q_{gd}		1.8	2.6	
Gate charge total V_{DD} = -48 V, I_D = -1.17 A, V_{GS} = 0 to -10 V	Q_g		5.2	7.8	
Gate plateau voltage V_{DD} = -48 V, I_D = -1.17 A	$V_{(plateau)}$		-3.14		V

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse Diode					
Inverse diode continuous forward current T_A = 25 °C	I_S			-1.17	A
Inverse diode direct current,pulsed T_A = 25 °C	I_{SM}			-4.68	
Inverse diode forward voltage V_{GS} = 0 V, I_F = -1.17 A	V_{SD}		-0.97	-1.3	V
Reverse recovery time V_R = -30 V, I_F=I_S , di_F/dt = 100 A/µs	t_{rr}		30.5	46	ns
Reverse recovery charge V_R = -30 V, I_F=I_S , di_F/dt = 100 A/µs	Q_{rr}		36	54	µC

Power Dissipation

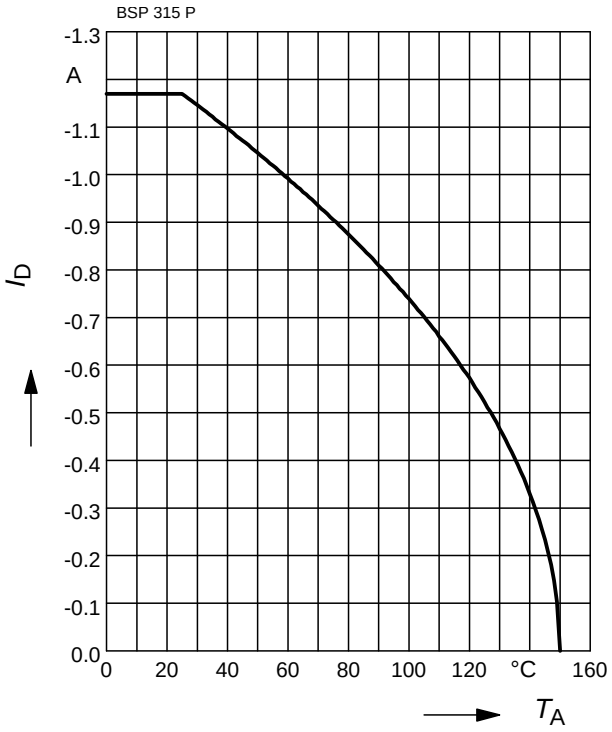
$P_{tot} = f(T_A)$



Drain current

$I_D = f(T_A)$

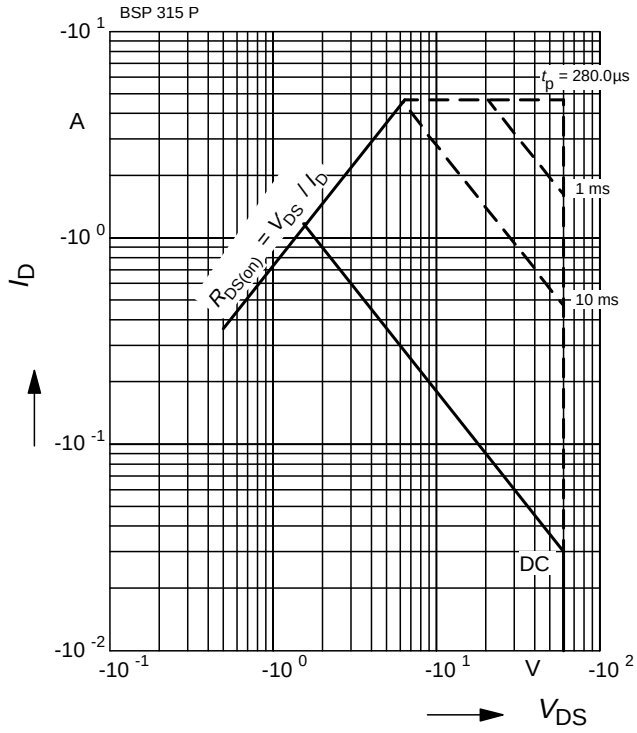
parameter :$V_{GS} \geq -10V$



Safe operating area

$I_D = f(V_{DS})$

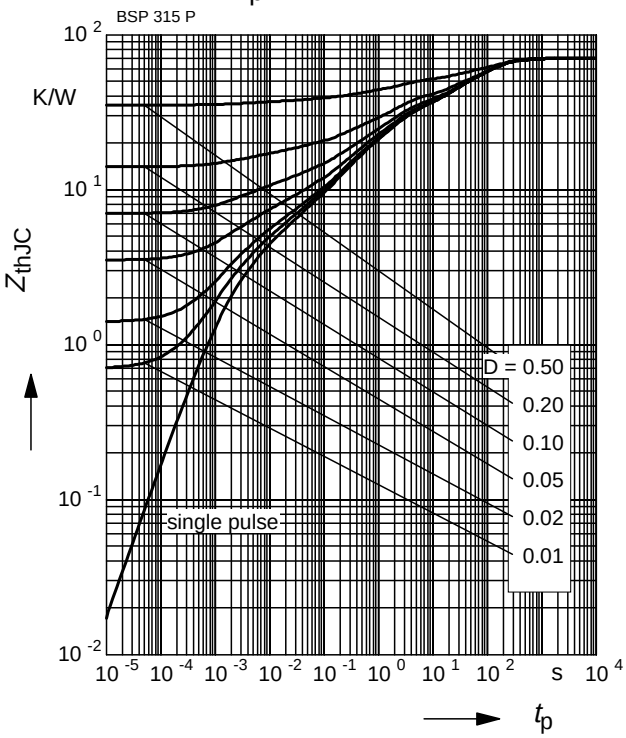
parameter : $D = 0$, $T_A = 25$ °C



Transient thermal impedance

$Z_{thJC} = f(t_p)$

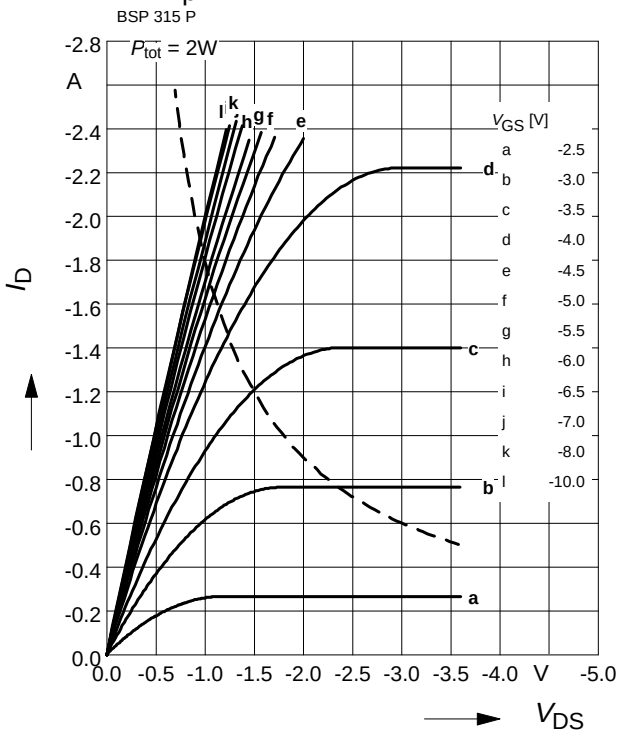
parameter : $D = t_p/T$



Typ. output characteristics

$I_D = f(V_{DS})$

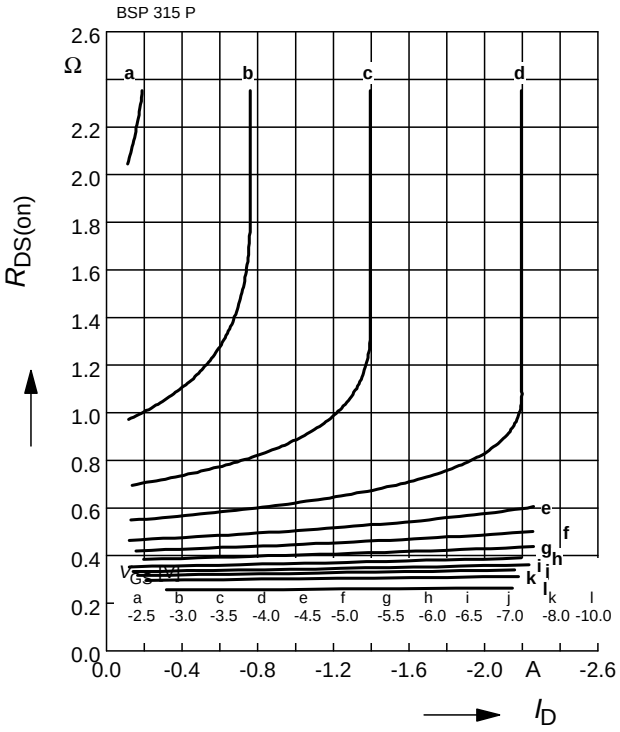
parameter: t_p = 80 µs



Typ. drain-source-on-resistance

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

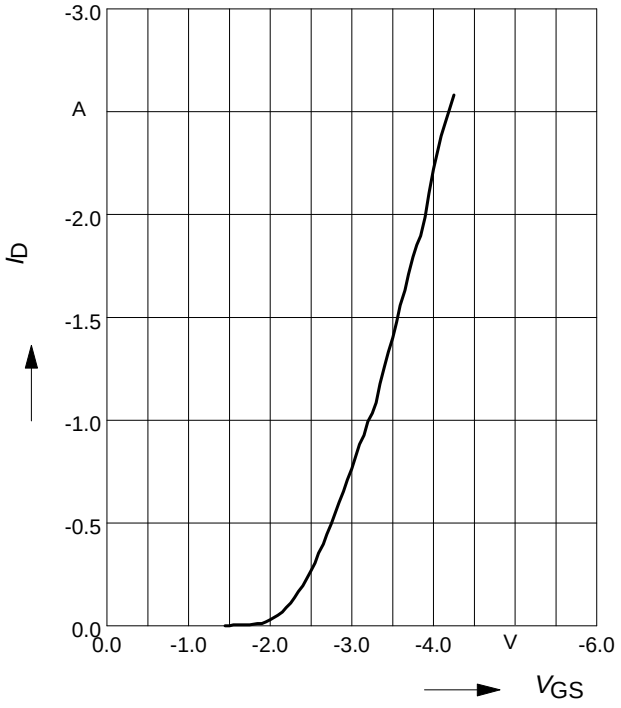
parameter: V_{GS}



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

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

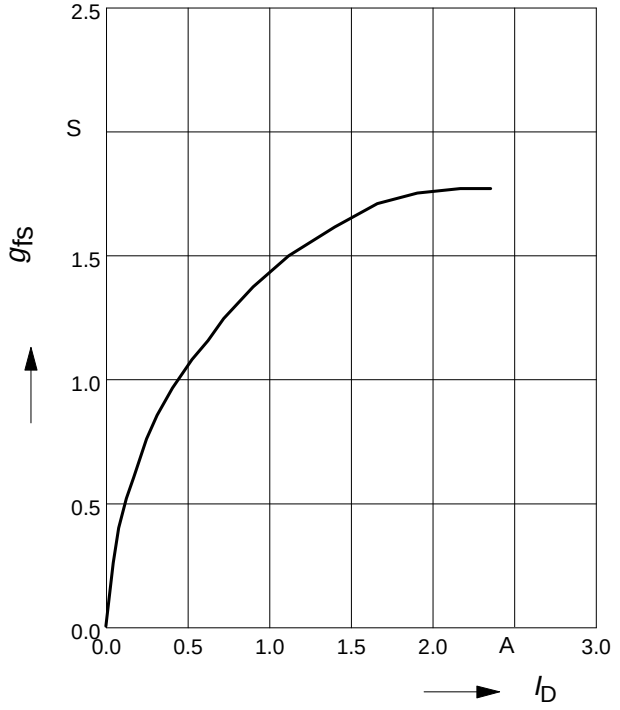
parameter: t_p = 80 µs



Typ. forward transconductance

$g_{fs} = f(I_D)$; T_j=25°C

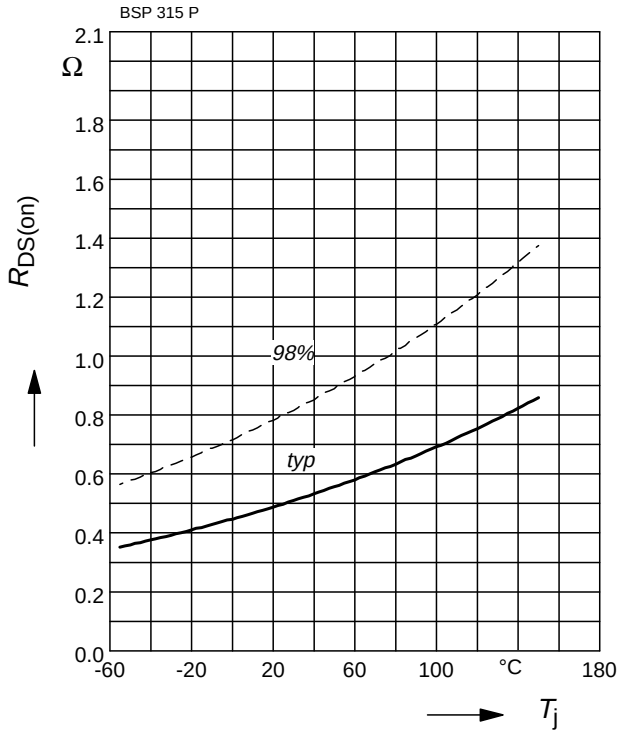
parameter: g_{fs}



Drain-source on-resistance

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

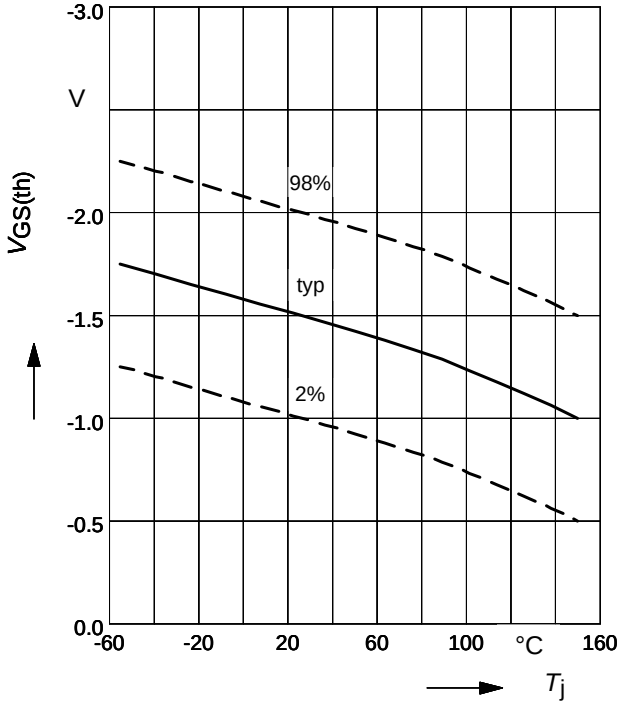
parameter: I_D = -1.17 A, V_{GS} = -10 V



Gate threshold voltage

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

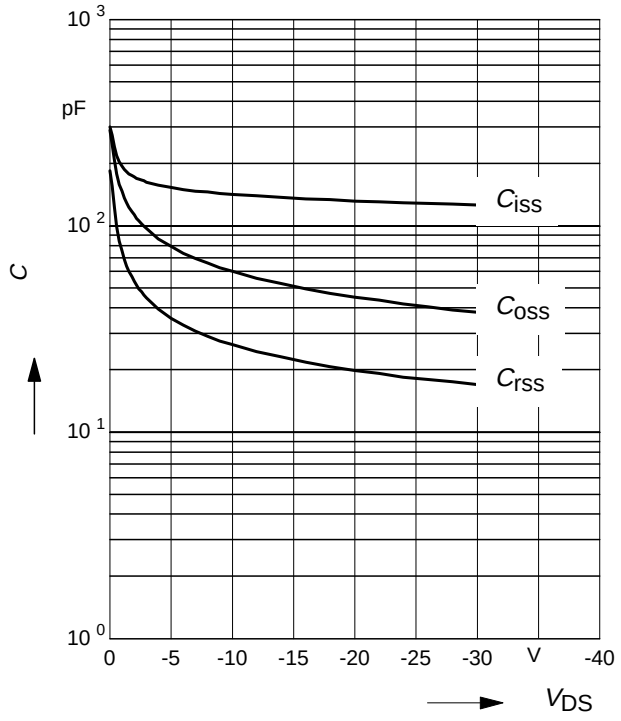
parameter: $V_{GS} = V_{DS}$, I_D = -160 µA



Typ. capacitances

C = f(VDS)

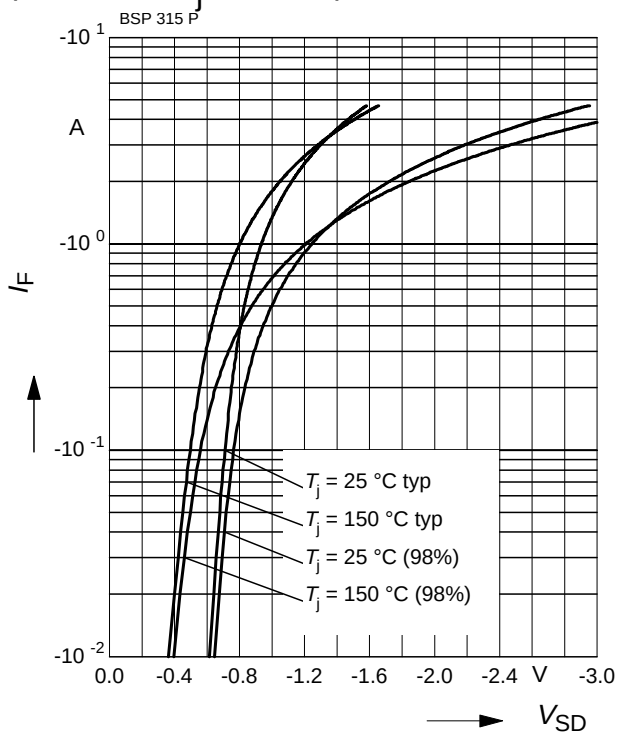
Parameter: V_{GS}=0 V, f=1 MHz



Forward characteristics of reverse diode

$I_F = f(V_{SD})$

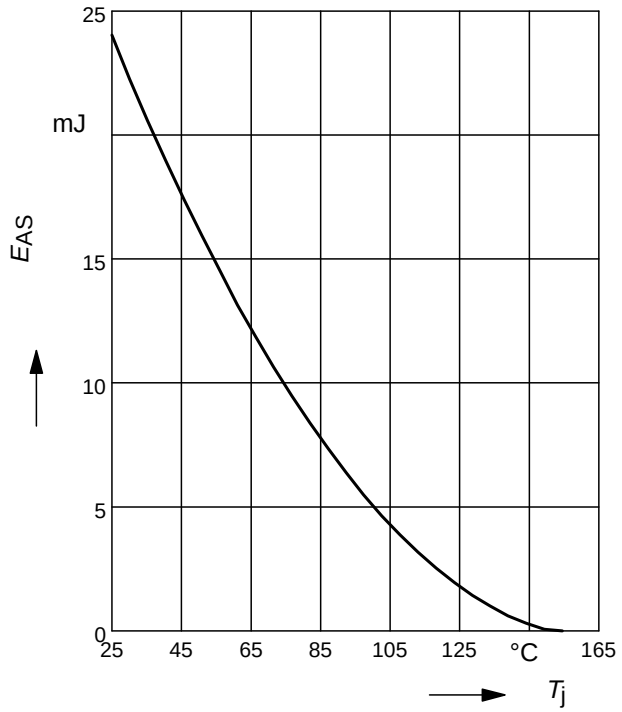
parameter: T_j , tp = 80 µs



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

parameter: I_D = -1.17 A , V_{DD} = -25 V

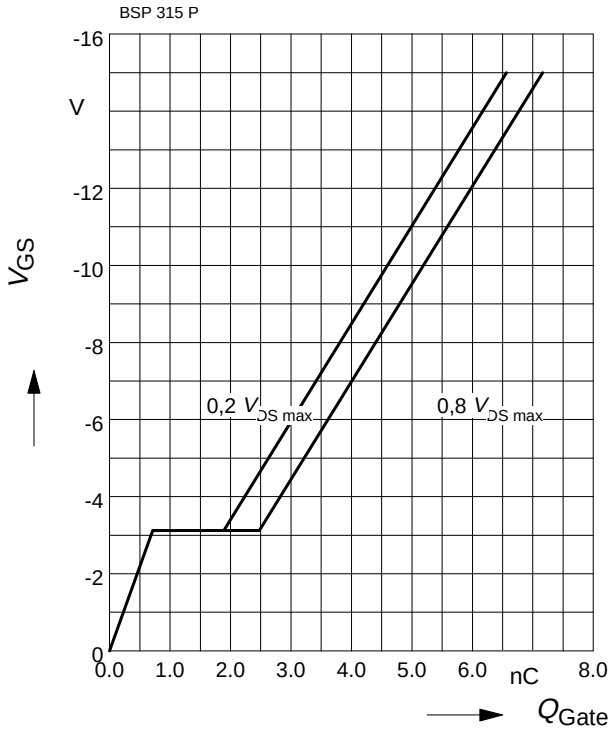
R_{GS} = 25 Ω



Typ. gate charge

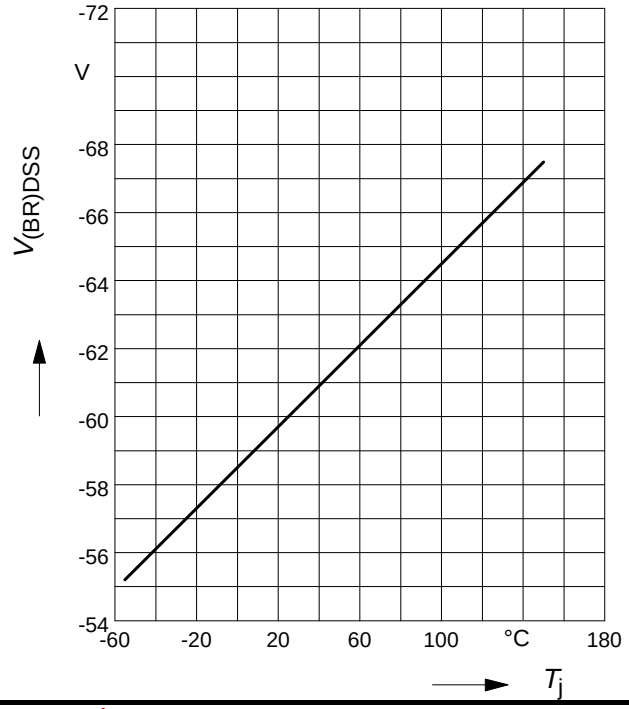
$V_{GS} = f(Q_{Gate})$

parameter: I_D = -1.17 A pulsed

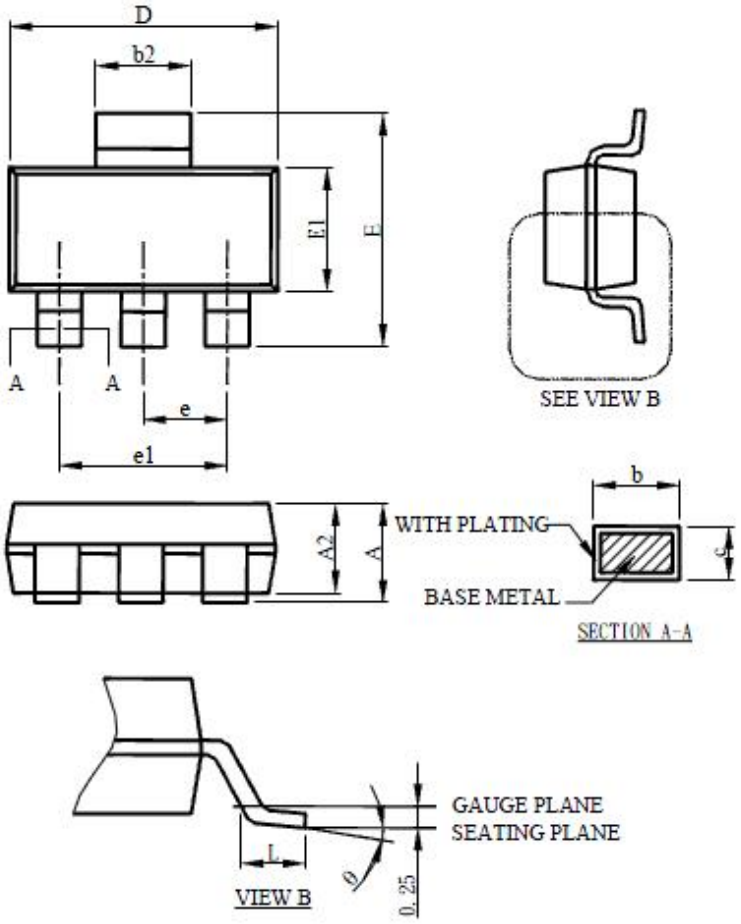


Drain-source breakdown voltage

$V_{(BR)DSS} = f(T_j)$



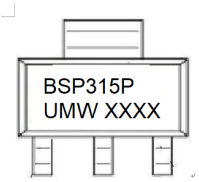
Package Mechanical Data SOT-223



SYMBOL	SOT-223	
	MILLIMETERS	
	MIN.	MAX.
A		1.80
A1	0.02	0.10
A2	1.55	1.65
b	0.66	0.84
b2	2.90	3.10
c	0.23	0.33
D	6.30	6.70
E	6.70	7.30
E1	3.30	3.70
e	2.30 BSC	
e1	4.60 BSC	
L	0.90	
θ	0°	8°

Note:
1.Refer to JEDEC TO-261AA.
2.Dimension D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs, and interlead flash, but including any mismatch between the top and bottom of the plastic body.
3.Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW BSP315P	SOT-223	2500	Tape and reel

单击下面可查看定价，库存，交付和生命周期等信息

>>UMW(友台半导体)