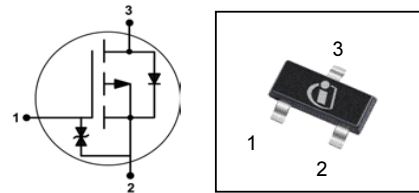


**OptiMOS™ P3 Small-Signal-Transistor**
**Features**

- P-channel
- Enhancement mode
- Logic level (4.5V rated)
- ESD protected
- Qualified according to AEC Q101
- 100% lead-free; RoHS compliant


**Product Summary**

$V_{DS}$	30	V
$R_{DS(on),max}$	$V_{GS}=-10\text{ V}$	80
	$V_{GS}=-4.5\text{ V}$	130
$I_D$	-2.0	A

**PG-SOT-23**


Type	Package	Tape and Reel Information	Marking	Lead Free	Packing
BSS308PE	PG-SOT-23	L6327: 3000 pcs/ reel	YFs	Yes	Non dry

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	$I_D$	$T_A=25\text{ °C}$	-2.0	A
		$T_A=70\text{ °C}$	-1.6	
Pulsed drain current	$I_{D,pulse}$	$T_A=25\text{ °C}$	-8.0	
Avalanche energy, single pulse	$E_{AS}$	$I_D=-2\text{ A}$ , $R_{GS}=25\ \Omega$	-10.7	mJ
Reverse diode $dv/dt$	$dv/dt$	$I_D=-2\text{ A}$ , $V_{DS}=-16\text{ V}$ , $di/dt=-200\text{ A}/\mu\text{s}$ , $T_{j,max}=150\text{ °C}$	6	kV/ $\mu\text{s}$
Gate source voltage	$V_{GS}$		$\pm 20$	V
Power dissipation <sup>1)</sup>	$P_{tot}$	$T_A=25\text{ °C}$	0.5	W
Operating and storage temperature	$T_j, T_{stg}$		-55 ... 150	°C
ESD Class		JESD22-A114 -HBM	2 (2kV to 4kV)	
Soldering Temperature			260 °C	°C
IEC climatic category; DIN IEC 68-1			55/150/56	°C

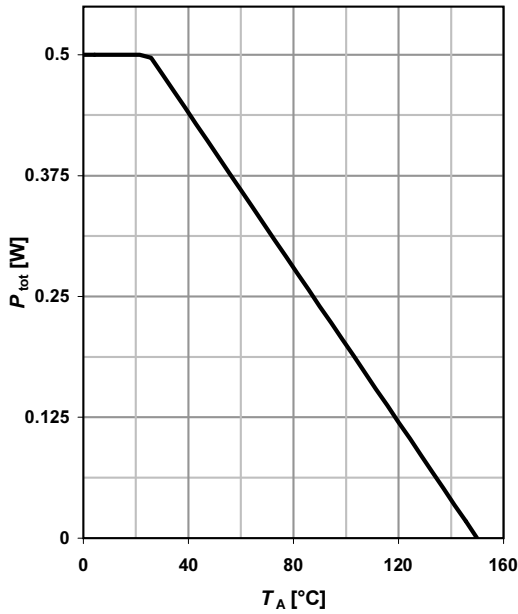
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
<b>Thermal characteristics</b>						
Thermal resistance, junction - ambient	$R_{thJA}$	minimal footprint <sup>1)</sup>	-	-	250	K/W
<b>Electrical characteristics, at <math>T_j=25\text{ }^\circ\text{C}</math>, unless otherwise specified</b>						
<b>Static characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-11\mu A$	-2.0	-1.5	-1.0	
Drain-source leakage current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V, T_j=25\text{ }^\circ\text{C}$	-	-	-1	$\mu A$
		$V_{DS}=-30V, V_{GS}=0V, T_j=150\text{ }^\circ\text{C}$	-	-	-100	
Gate-source leakage current	$I_{GSS}$	$V_{GS}=-20V, V_{DS}=0V$	-	-	-5	$\mu A$
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1.7A$	-	88	130	$m\Omega$
		$V_{GS}=-10V, I_D=-2A$	-	62	80	
Transconductance	$g_{fs}$	$ V_{DS} >2 I_D R_{DS(on)max}, I_D=-1.6A$		4.6	-	S

<sup>1)</sup> Performed on 40mm<sup>2</sup> FR4 PCB. The traces are 1mm wide, 70 $\mu$ m thick and 20mm long; they are present on both sides of the PCB.

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
<b>Dynamic characteristics</b>						
Input capacitance	$C_{iss}$	$V_{GS}=0\text{ V}, V_{DS}=-15\text{ V},$ $f=1\text{ MHz}$	-	376	500	pF
Output capacitance	$C_{oss}$		-	196	261	
Reverse transfer capacitance	$C_{rss}$		-	12	18	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=-15\text{ V},$ $V_{GS}=-10\text{ V},$ $I_D=-2\text{ A}, R_G=6\ \Omega$	-	5.6	-	ns
Rise time	$t_r$		-	7.7	-	
Turn-off delay time	$t_{d(off)}$		-	15.3	-	
Fall time	$t_f$		-	2.8	-	
<b>Gate Charge Characteristics</b>						
Gate to source charge	$Q_{gs}$	$V_{DD}=-15\text{ V}, I_D=-2\text{ A},$ $V_{GS}=0\text{ to }-10\text{ V}$	-	-1.2	-	nC
Gate to drain charge	$Q_{gd}$		-	-0.6	-	
Gate charge total	$Q_g$		-	-5.0	-	
Gate plateau voltage	$V_{plateau}$		-	-3.1	-	V
<b>Reverse Diode</b>						
Diode continuous forward current	$I_S$	$T_A=25\text{ }^\circ\text{C}$	-	-	-0.4	A
Diode pulse current	$I_{S,pulse}$		-	-	-8.4	
Diode forward voltage	$V_{SD}$	$V_{GS}=0\text{ V}, I_F=-2\text{ A},$ $T_J=25\text{ }^\circ\text{C}$	-	-0.8	-1.1	V
Reverse recovery time	$t_{rr}$	$V_R=10\text{ V}, I_F=-2\text{ A},$ $di_F/dt=100\text{ A}/\mu\text{s}$	-	14	-	ns
Reverse recovery charge	$Q_{rr}$		-	-5.9	-	nC

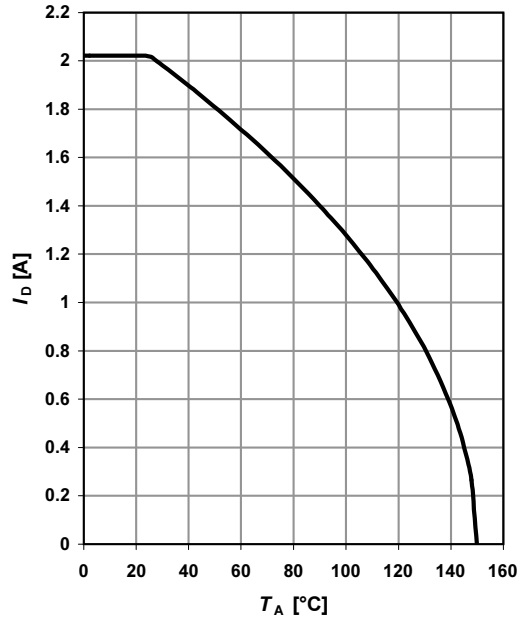
**1 Power dissipation**

$$P_{tot} = f(T_A)$$



**2 Drain current**

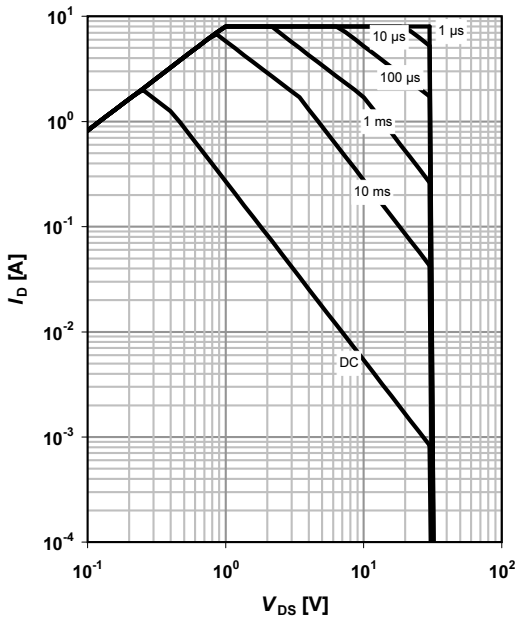
$$I_D = f(T_A); V_{GS} \geq 10 \text{ V}$$



**3 Safe operating area**

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

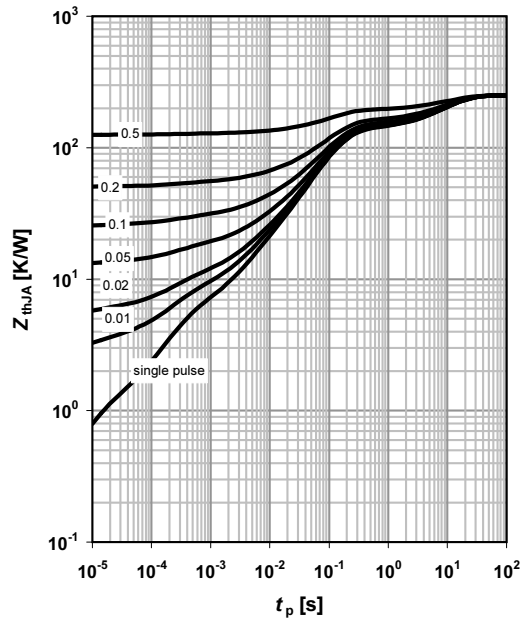
parameter:  $t_p$



**4 Max. transient thermal impedance**

$$Z_{thJA} = f(t_p)$$

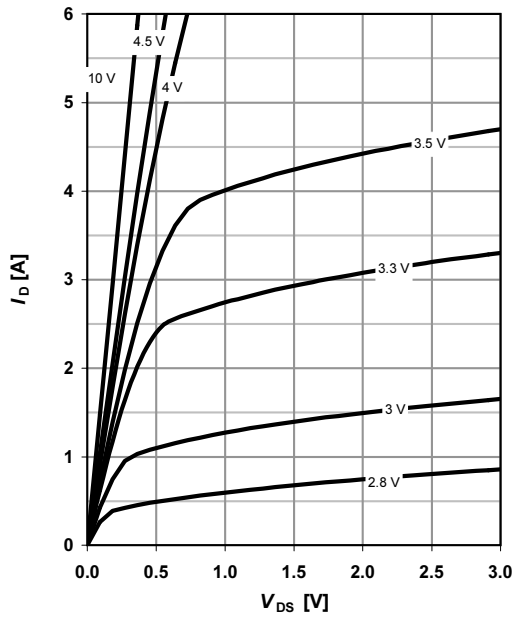
parameter:  $D = t_p/T$



**5 Typ. output characteristics**

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

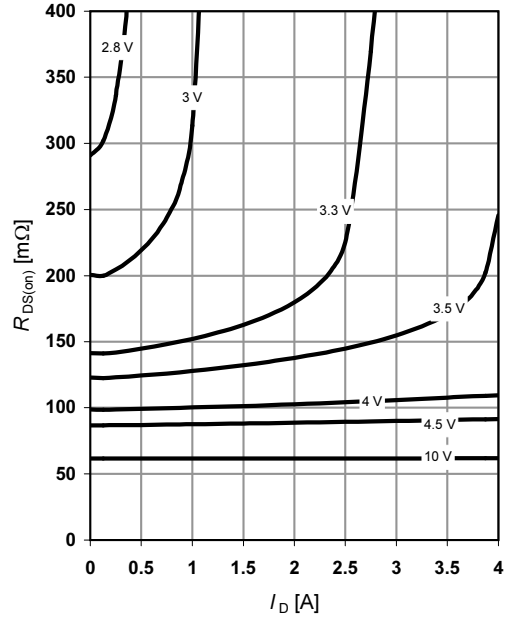
parameter:  $V_{GS}$



**6 Typ. drain-source on resistance**

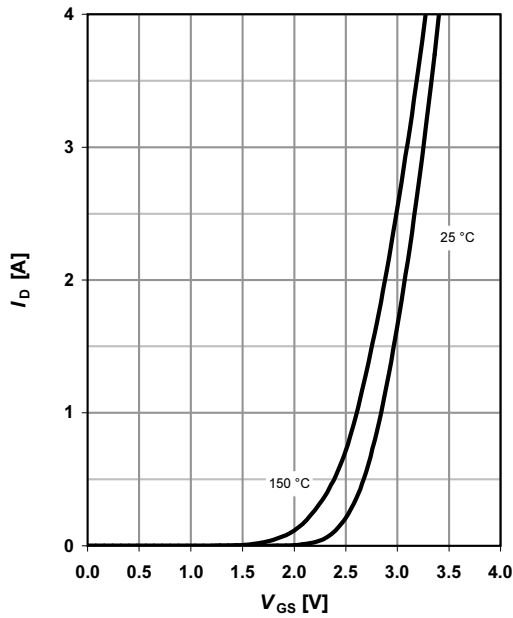
$$R_{DS(on)} = f(I_D); T_j = 25\text{ }^\circ\text{C}$$

parameter:  $V_{GS}$



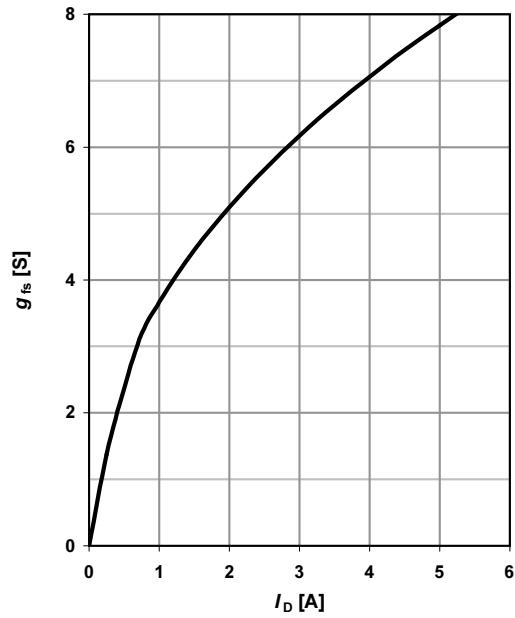
**7 Typ. transfer characteristics**

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



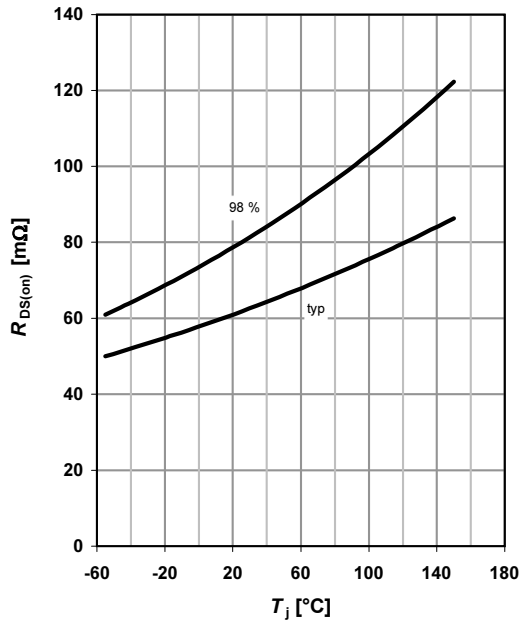
**8 Typ. forward transconductance**

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



**9 Drain-source on-state resistance**

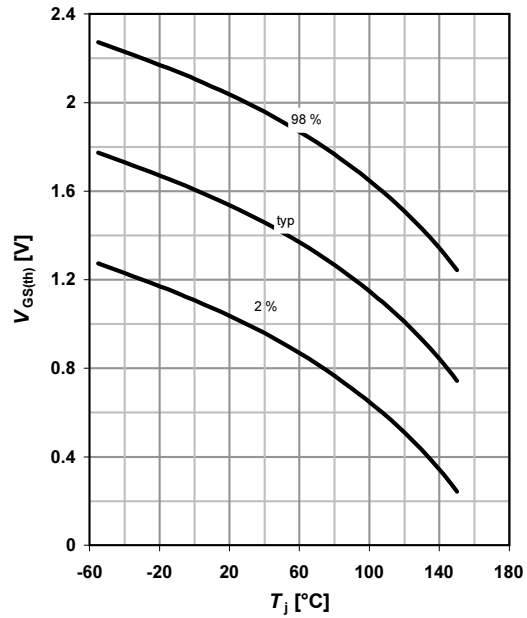
$$R_{DS(on)} = f(T_j); I_D = 2 \text{ A}; V_{GS} = -10 \text{ V}$$



**10 Typ. gate threshold voltage**

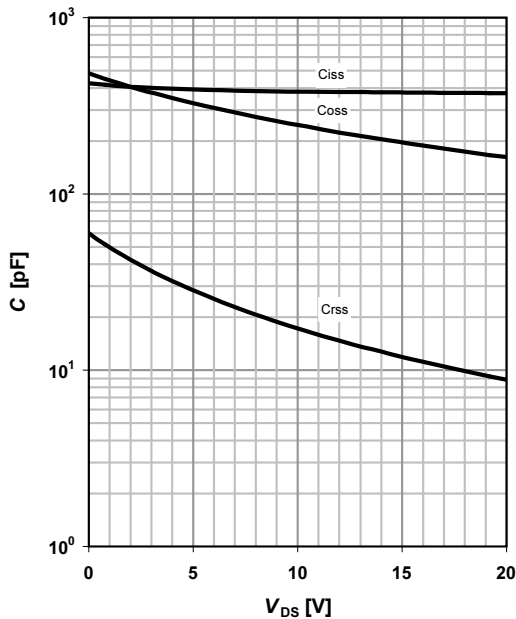
$$V_{GS(th)} = f(T_j); V_{DS} = V_{GS}; I_D = 11 \mu\text{A}$$

parameter:  $I_D$



**11 Typ. capacitances**

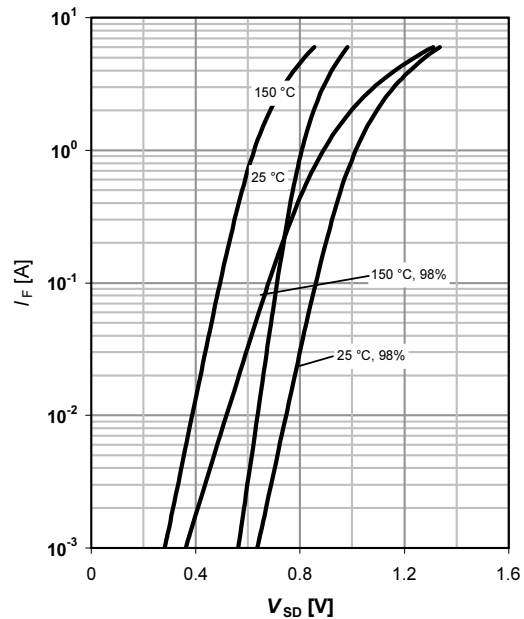
$$C = f(V_{DS}); V_{GS} = 0 \text{ V}; f = 1 \text{ MHz}; T_j = 25^\circ\text{C}$$



**12 Forward characteristics of reverse diode**

$$I_F = f(V_{SD})$$

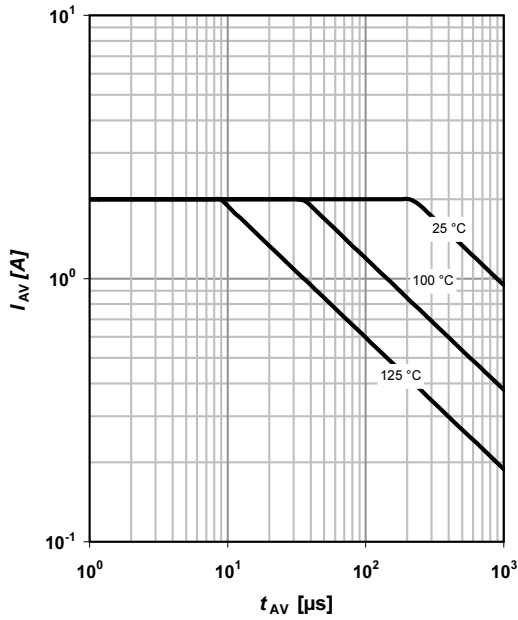
parameter:  $T_j$



**13 Avalanche characteristics**

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

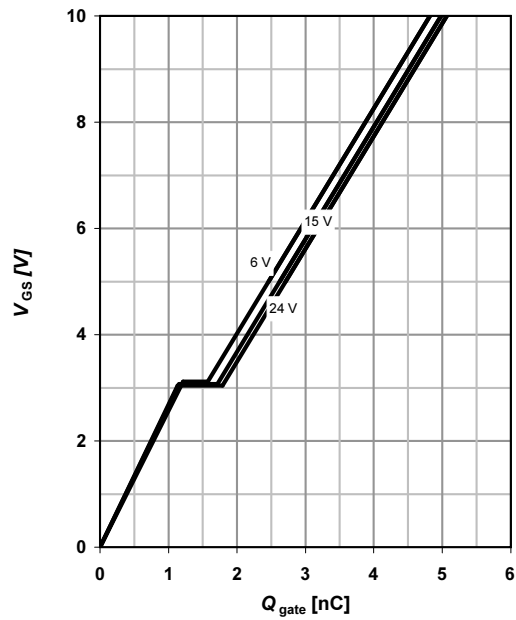
parameter:  $T_{j(start)}$



**14 Typ. gate charge**

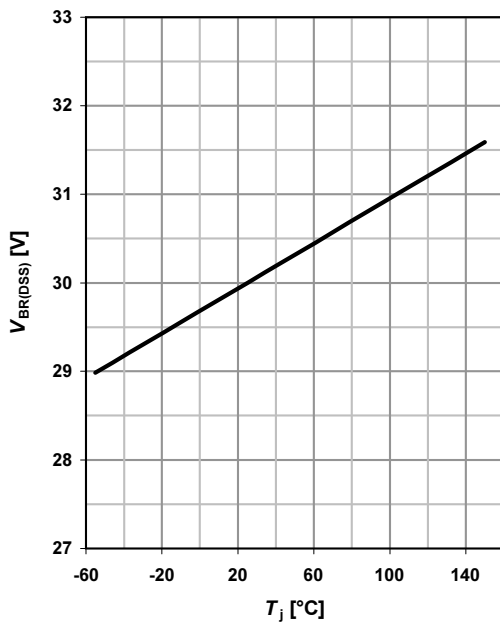
$V_{GS}=f(Q_{gate}); I_D=-2 \text{ A pulsed}$

parameter:  $V_{DD}$

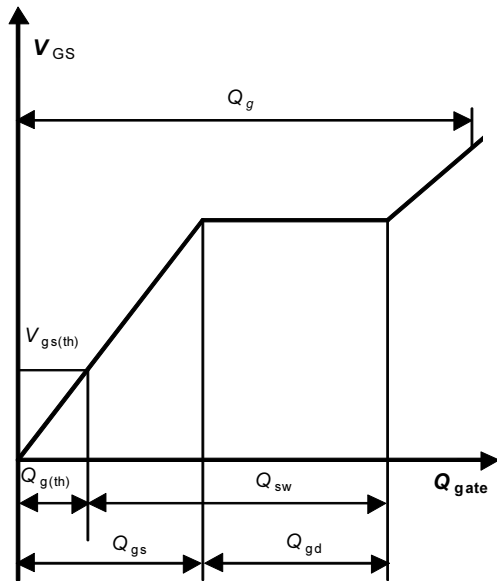


**15 Drain-source breakdown voltage**

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

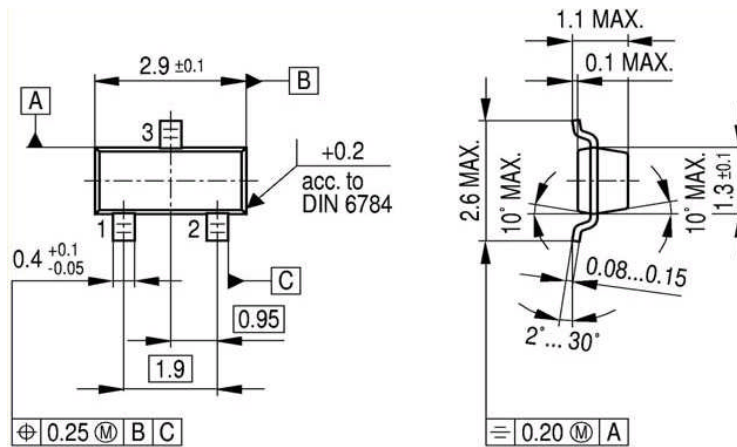


**16 Gate charge waveforms**

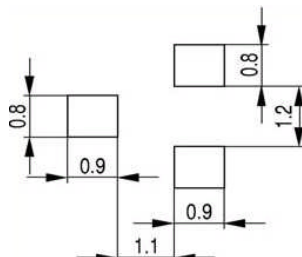


SOT-23

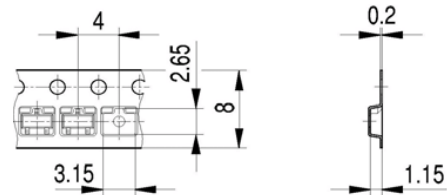
Package Outline:



Footprint:



Packaging:





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