

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
300V	6.3Ω@10V	1A

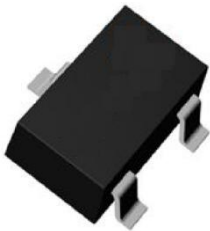
Feature

- Fast Switching
- Low Gate Charge and Rds on

Application

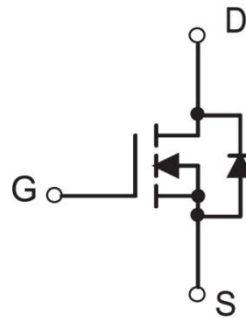
- DC-DC converter
- Ideal for high-frequency switching and synchronous rectification

Package

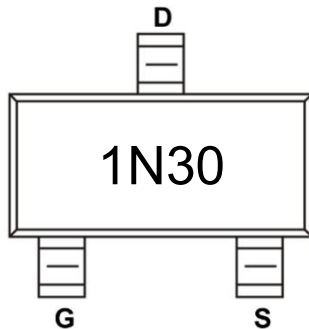


SOT-23

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	300	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current(Tc=25°C)	I_D	1	A
Pulsed Drain Current ²⁾	I_{DM}	4	A
Power Dissipation(Tc=25°C)	P_D	0.36	W
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	347	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Electrical characteristics (Ta=25 °C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	300			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 240V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.1	1.6	2.1	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.5A$		5	6.3	Ω
Dynamic characteristics³⁾						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		59		pF
Output Capacitance	C_{oss}			7.5		
Reverse Transfer Capacitance	C_{rss}			3		
Total Gate Charge	Q_g	$V_{DS} = 192V, V_{GS} = 10V, I_D = 1A$		0.15		nC
Gate-Source Charge	Q_{gs}			0.9		
Gate-Drain Charge	Q_{gd}			2		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 120V, V_{GS} = 10V, I_D = 1A, R_G = 6\Omega,$		3.4		nS
Turn-on rise time	t_r			3		
Turn-off delay time	$t_{d(off)}$			14		
Turn-off fall time	t_f			64		

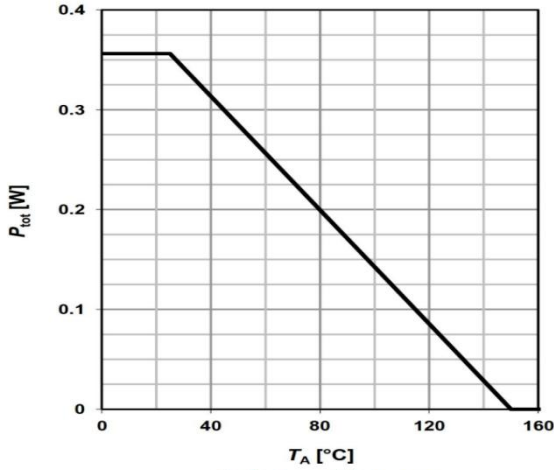
Notes:

- 1) The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z copper
- 2) The data tested by pulsed , pulse width ≅ 300us , duty cycle ≅ 2%
- 3) Guaranteed by design, not subject to production

Typical Characteristics

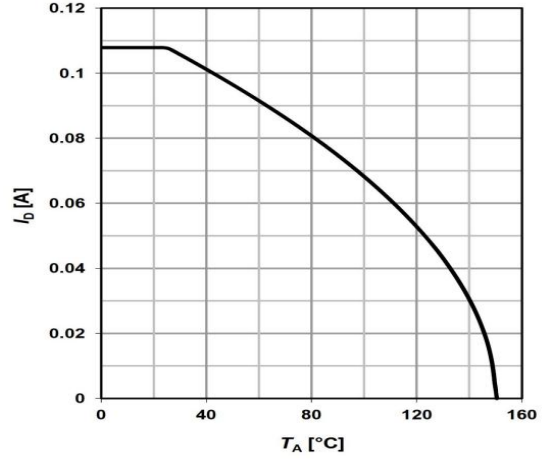
Power dissipation

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



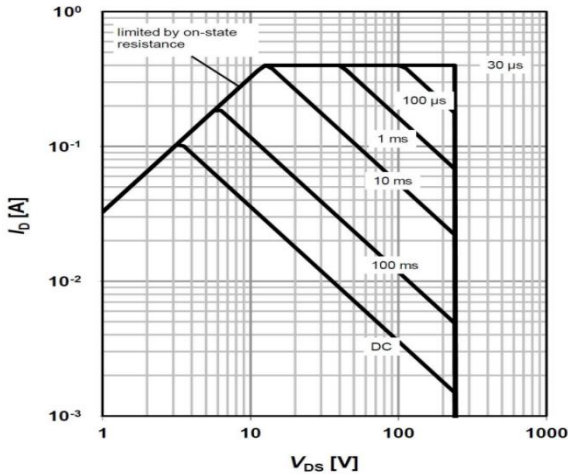
Drain current

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



Safe operating area

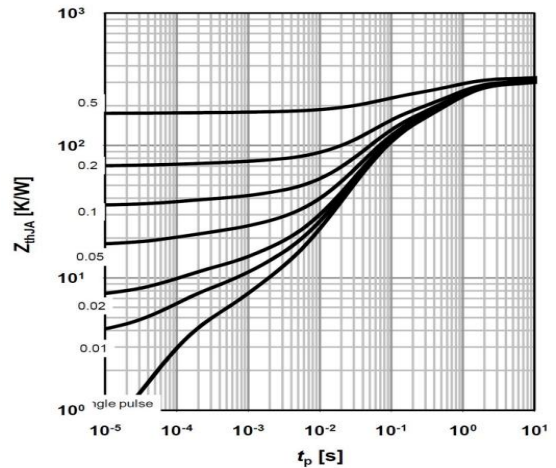
$$I_D=f(V_{DS}); T_A=25\text{ }^\circ\text{C}; D=0\text{ parameter: }t_p$$



Max. transient thermal impedance

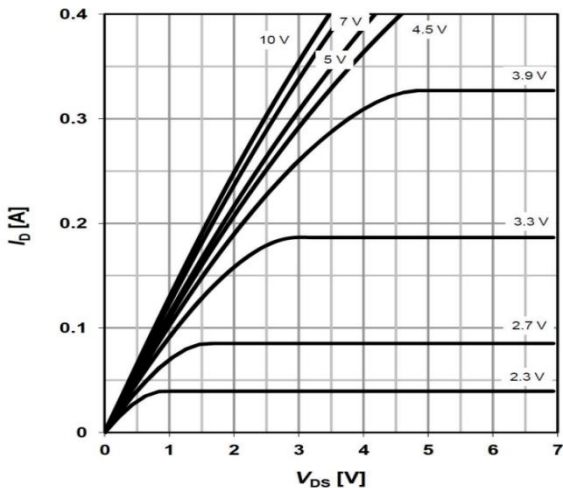
$$Z_{thJA}=f(t_p)$$

$$\text{parameter: } D=t_p/T$$



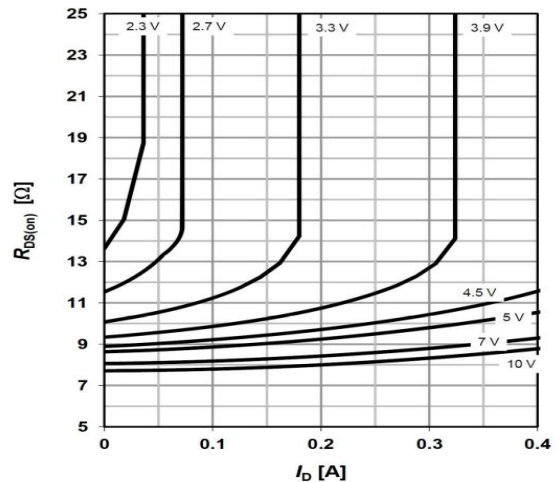
Typ. output characteristics $I_D=f(V_{DS});$

$$T_J=25\text{ }^\circ\text{C parameter: }V_{GS}$$



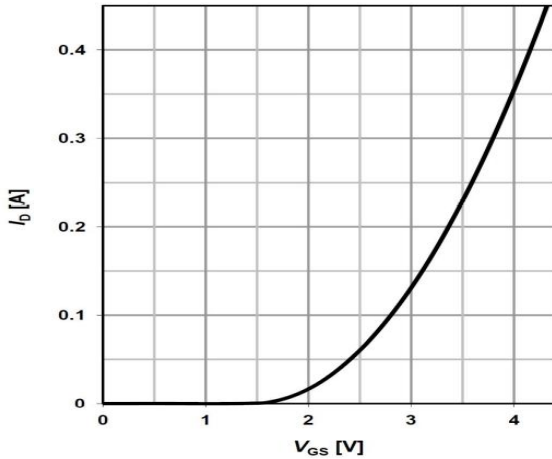
Typ. drain-source on resistance

$$R_{DS(on)}=f(I_D); T_J=25\text{ }^\circ\text{C parameter: }V_{GS}$$

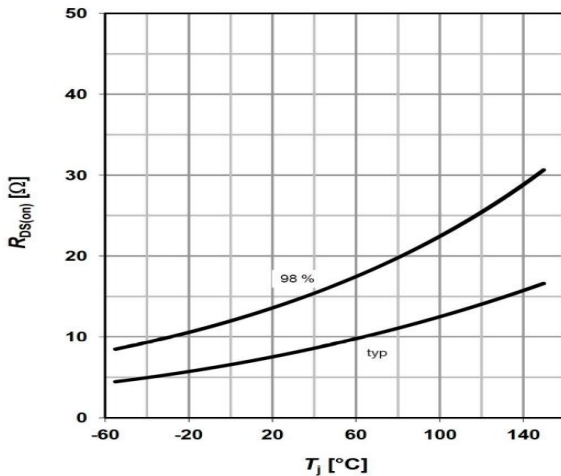


Typical Characteristics

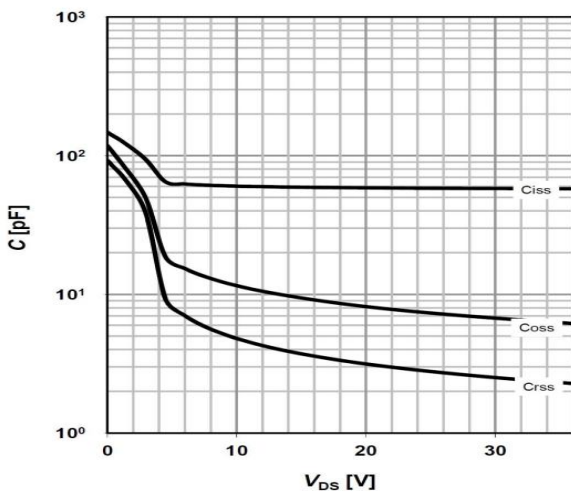
Typ. transfer characteristics
 $I_D = f(V_{GS}); |V_{DS}| > 2|I_D|R_{DS(on)max}$



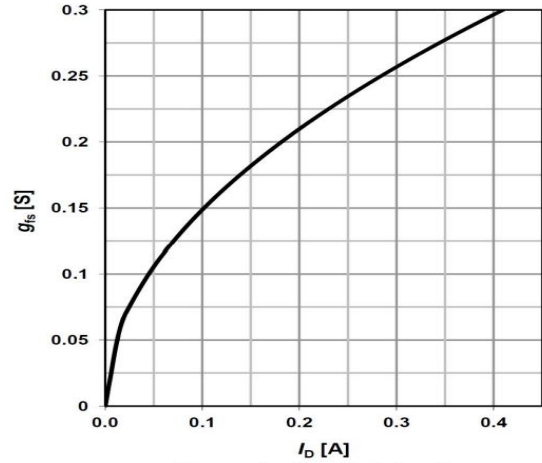
Drain-source on-state resistance
 $R_{DS(on)} = f(T_j); I_D = 0.1 \text{ A}; V_{GS} = 10 \text{ V}$



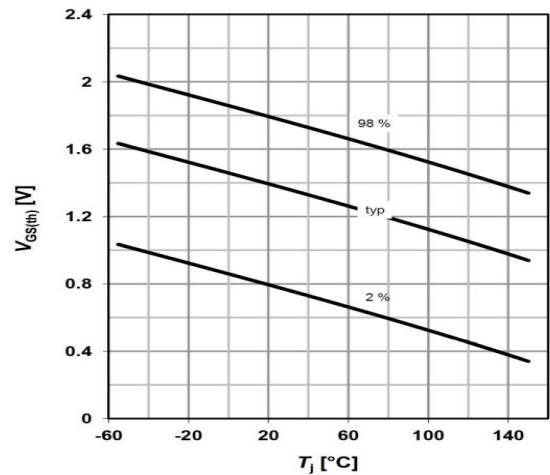
Typ. capacitances
 $C = f(V_{DS}); V_{GS} = 0 \text{ V}; f = 1 \text{ MHz}; T_j = 25^\circ\text{C}$



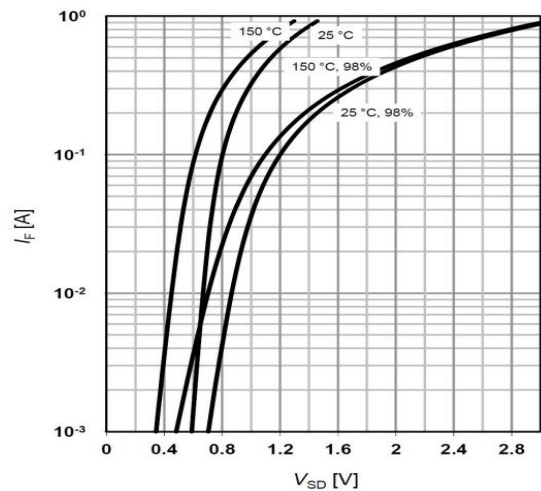
Typ. forward transconductance
 $g_{fs} = f(I_D); T_j = 25^\circ\text{C}$



Typ. gate threshold voltage
 $V_{GS(th)} = f(T_j); V_{DS} = V_{GS}; I_D = 56 \mu\text{A}$
parameter: I_D



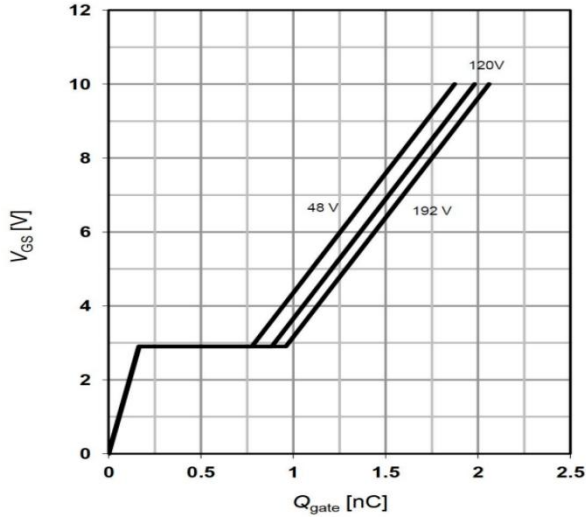
Forward characteristics of reverse diode
 $I_F = f(V_{SD})$
parameter: T_j



Typical Characteristics

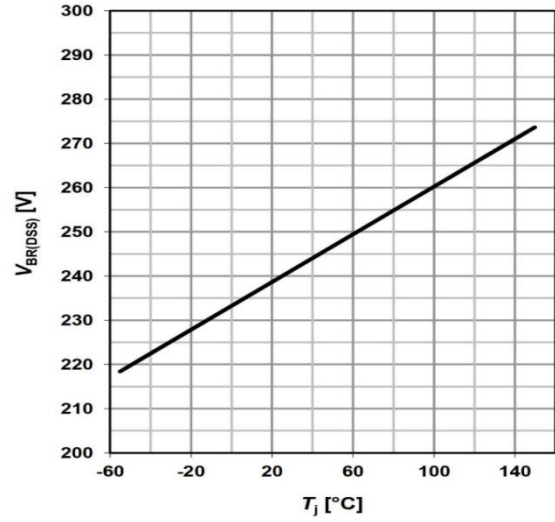
Typ. gate charge

$V_{GS}=f(Q_{gate}); I_D=0.1\text{ A pulsed}$
parameter: V_{DD}

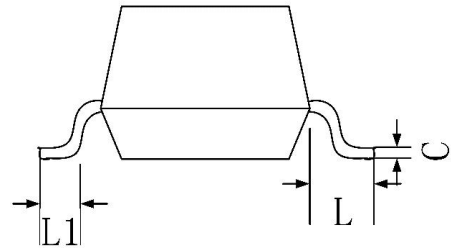
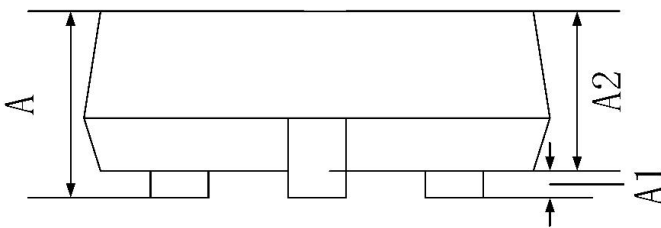
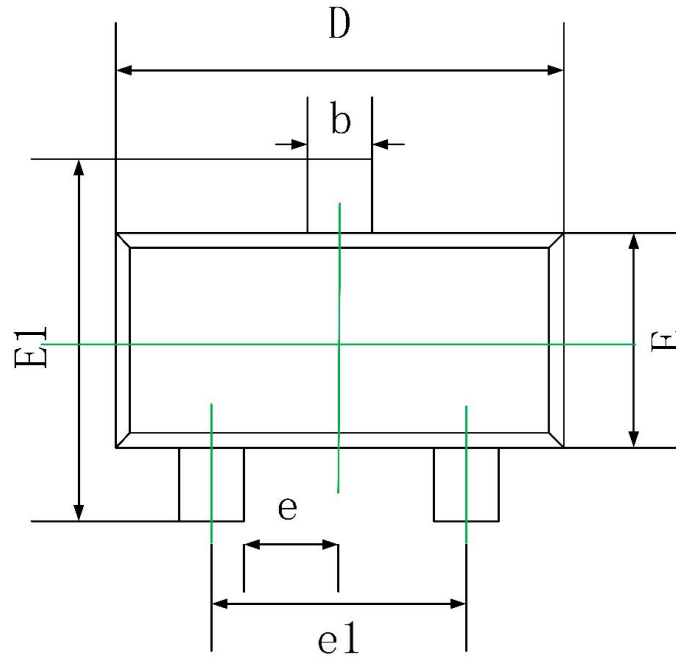


Drain-source breakdown voltage

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



SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
C	0.080	0.200	0.003	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 REF.		0.037 REF.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020