

### Product Summary

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

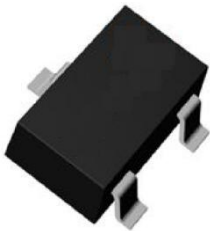
### Feature

- Fast Switching
- Low Gate Charge and Rds on

### Application

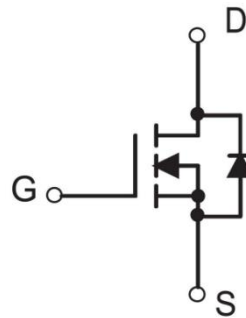
- DC-DC converter
- Ideal for high-frequency switching and synchronous rectification

### Package

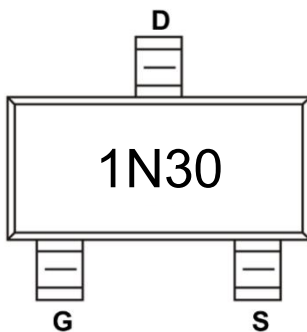


SOT-23-3L

### 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	$I_{DM}$	4	A
Power Dissipation(Tc=25°C)	$P_D$	0.36	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	347	°C/W
Single Pulse Avalanche Energy <sup>1)</sup>	$E_{AS}$	8	mJ
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
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	300			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 240V, V_{GS} = 0V, T_J = 25^\circ C$			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
<b>Dynamic characteristics<sup>2)</sup></b>						
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	$Q_g$	$V_{DS} = 192V, V_{GS} = 10V, I_D = 1A$		2.1		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		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current	$I_S$				1	A
Diode Forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 0.5A$			1.2	V

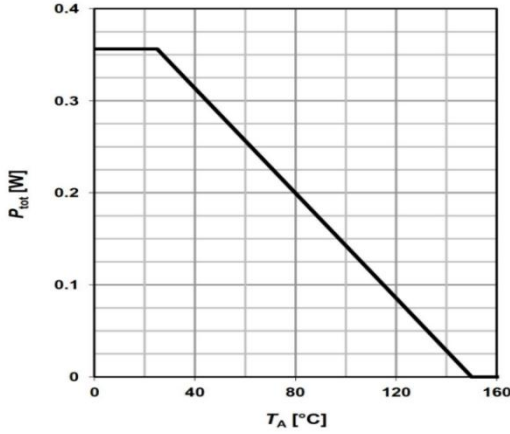
Notes:

- 1) The test condition is  $V_{DD} = 50V, V_{GS} = 10V, L = 64mH, R_G = 25\Omega$
- 2) Guaranteed by design, not subject to production

### Typical Characteristics

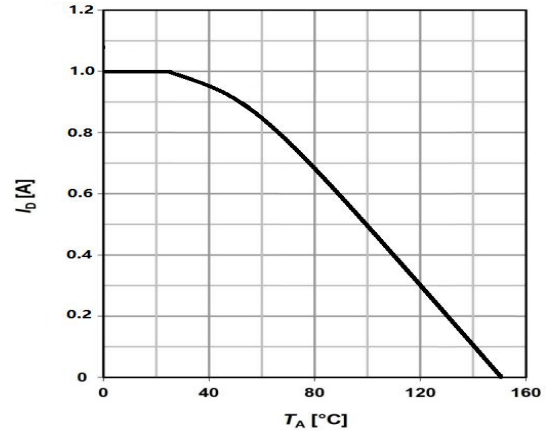
**Power dissipation**

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



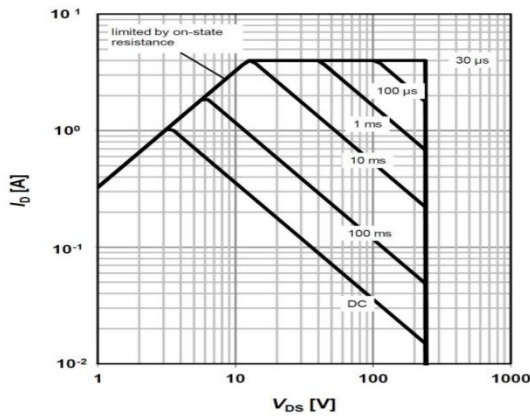
**Drain current**

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



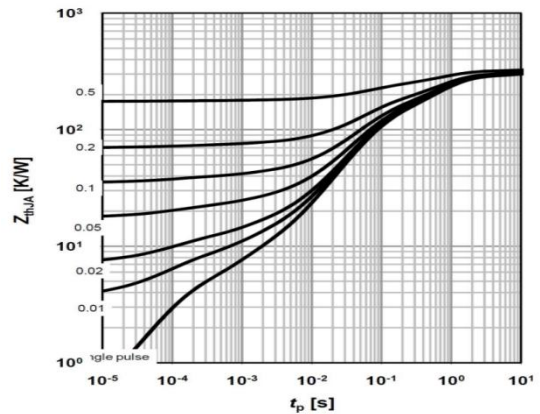
**Safe operating area**

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



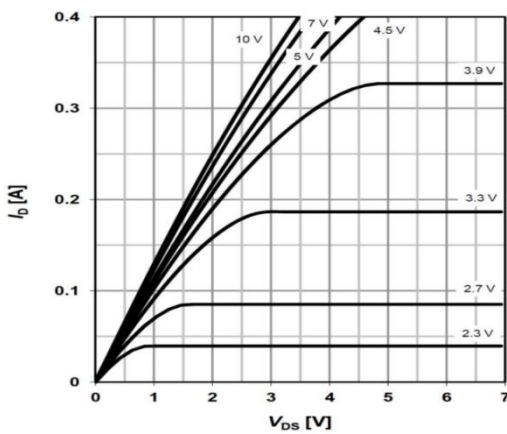
**Max. transient thermal impedance**

$$Z_{thJA}=f(t_p)$$
  
parameter:  $D = t_p/T$



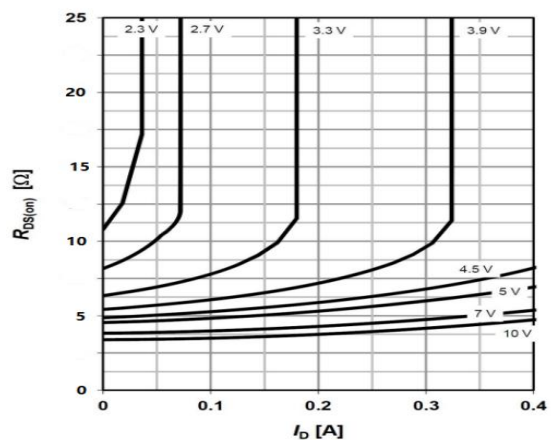
**Typ. output characteristics**  $I_D=f(V_{DS});$

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



**Typ. drain-source on resistance**

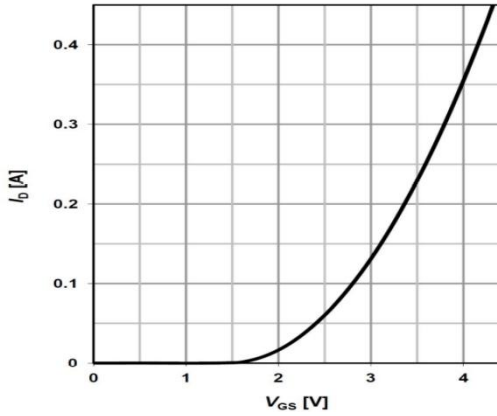
$$R_{DS(on)}=f(I_D); T_J=25 \text{ °C parameter: } V_{GS}$$



## Typical Characteristics

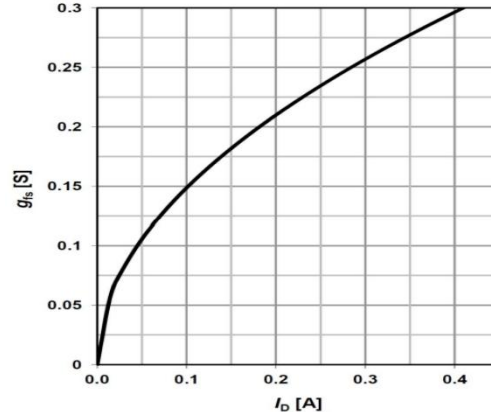
**Typ. transfer characteristics**

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



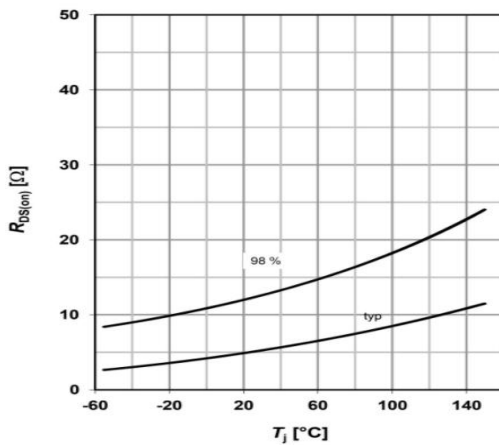
**Typ. forward transconductance**

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



**Drain-source on-state resistance**

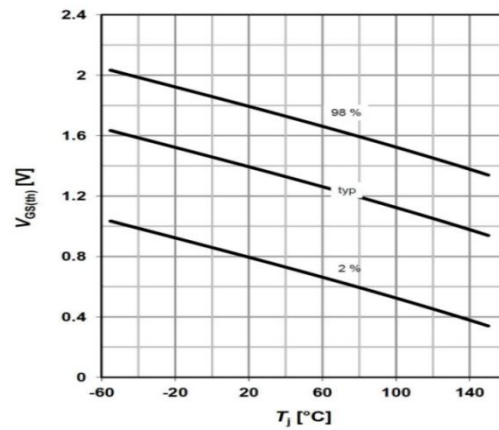
$$R_{DS(on)} = f(T_j); I_D = 0.5\text{ A}; V_{GS} = 10\text{ V}$$



**Typ. gate threshold voltage**

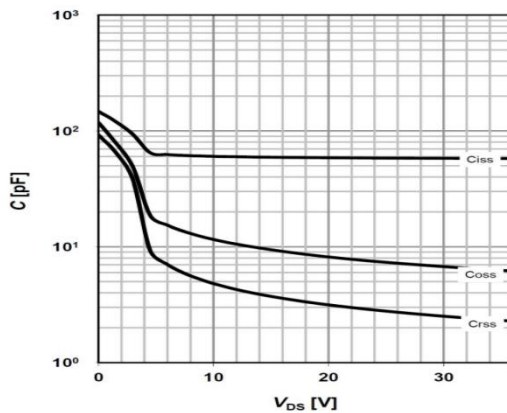
$$V_{GS(th)} = f(T_j); V_{DS} = V_{GS}; I_D = 250\mu\text{A}$$

parameter:  $I_D$



**Typ. capacitances**

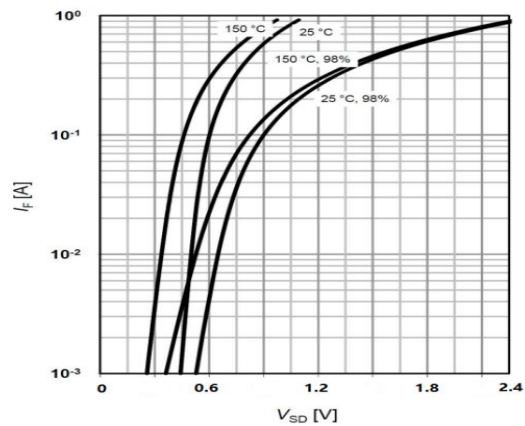
$$C = f(V_{DS}); V_{GS} = 0\text{ V}; f = 1\text{ MHz}; T_j = 25^\circ\text{C}$$



**Forward characteristics of reverse diode**

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

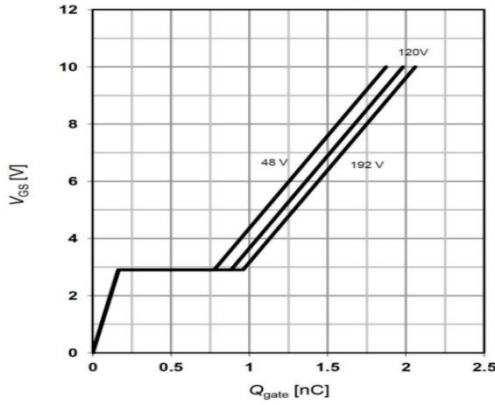
parameter:  $T_j$



## Typical Characteristics

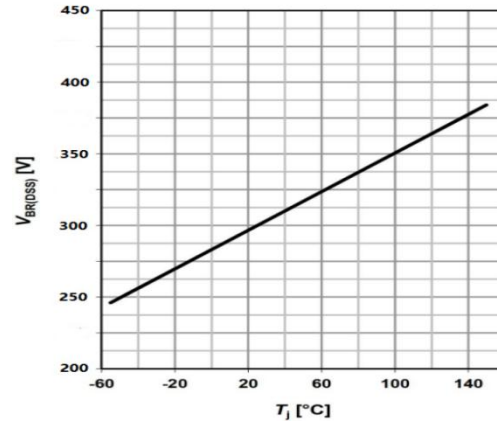
Typ. gate charge

$V_{GS}=f(Q_{gate}); I_D=1\text{ A pulsed}$   
parameter:  $V_{DD}$

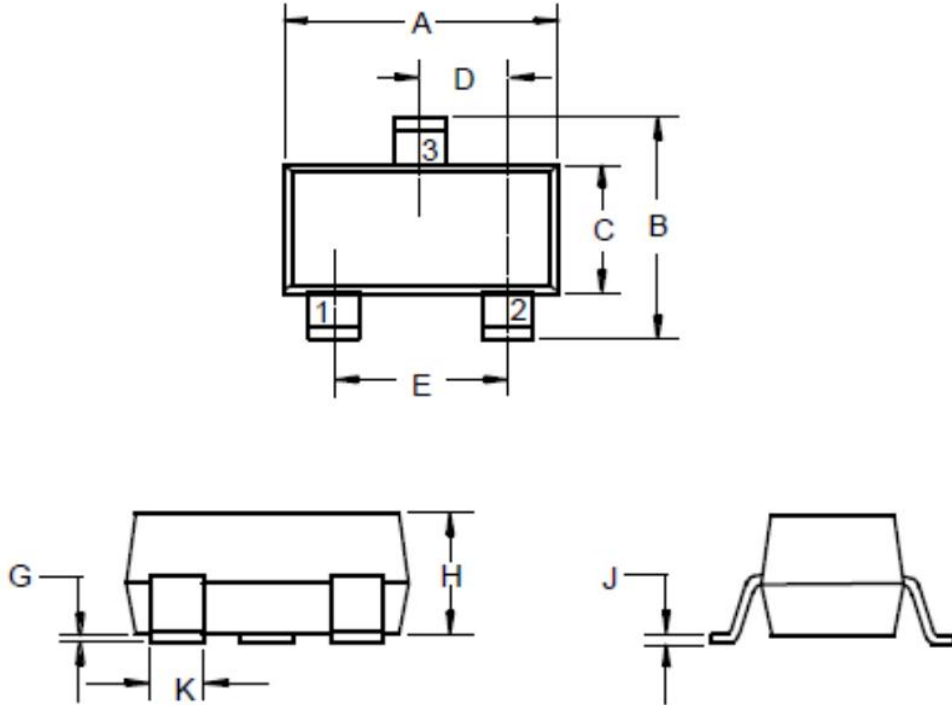


Drain-source breakdown voltage

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



## SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.820	3.020	0.111	0.119
B	2.650	2.950	0.104	0.116
C	1.500	1.700	0.059	0.067
D	0.865	1.015	0.034	0.040
E	1.800	2.000	0.071	0.079
G	0.000	0.100	0.000	0.004
H	1.050	1.250	0.041	0.049
J	0.100	0.200	0.004	0.008
K	0.300	0.500	0.012	0.020