

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-30V	11mΩ@-10V	-20A
	17mΩ@-4.5V	

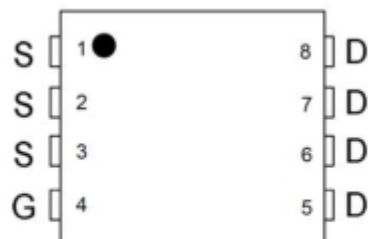
## Feature

- Enhancement mode
- Low on-resistance  $R_{DS(on)}$
- Pb-free lead plating; RoHS compliant

## Application

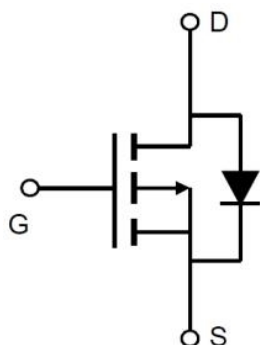
- PWM Application
- Load switch
- Power management

## Package

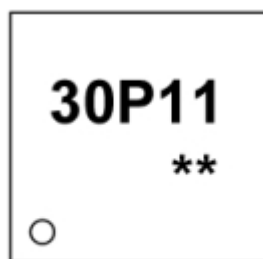


PDFNWB3.3×3.3-8L

## Circuit diagram



## Marking



30P11 =Device Code  
\*\* =Week Code

## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-30	V
Gate-Source Voltage	V <sub>GS</sub>	±25	V
Continuous Drain Current	I <sub>D</sub>	-20	A
Pulsed Drain Current <sup>1)</sup>	I <sub>DM</sub>	-80	A
Power Dissipation	P <sub>D</sub>	33	W
Thermal Resistance from Junction to Ambient <sup>2)</sup>	R <sub>θJA</sub>	3.8	°C/W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55~ +150	°C

### Notes:

1. Repetitive rating: Pulse width limited by junction temperature.
2. Surface mounted on FR4 board, t ≤ 10s.

## Electrical characteristics

( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			-1	μA
Zero Gate Voltage Drain Current ( T <sub>j</sub> =125°C)		V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			-100	
Gate-Source Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	μA
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1	-1.5	-2.5	V
Drain-Source On-Resistance <sup>1</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A		11	15	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -6A		17	22	
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> =0V, f=1MHz		1915		pF
Output Capacitance	C <sub>oss</sub>			300		
Reverse Transfer Capacitance	C <sub>rss</sub>			210		
Gate Resistance	R <sub>g</sub>	f=1MHz		4.8		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, I <sub>D</sub> = -10A, V <sub>GS</sub> = -10V		39		nC
Gate-Source Charge	Q <sub>gs</sub>			7		
Gate-Drain Charge	Q <sub>gd</sub>			13		
Switching Characteristics						
Turn-on Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> = -15V, I <sub>D</sub> = -10A, R <sub>GEN</sub> =3Ω, V <sub>GS</sub> = -10V		10		nS
Turn-on Rise Time	T <sub>r</sub>			10.6		
Turn-off Delay Time	T <sub>d(off)</sub>			31		
Turn-off Fall Time	T <sub>f</sub>			10		
Drain-Source Diode Characteristics						
Forward on voltage	V <sub>SD</sub>	I <sub>SD</sub> = -10A,V <sub>GS</sub> =0V		-0.8	-1.2	V
Reverse Recovery Time	trr	T <sub>j</sub> = 25°C,I <sub>sd</sub> = - 10A,V <sub>GS</sub> =0V di/dt= -500A/μs		16		nS
Reverse Recovery Charge	Qrr			42		nC

### Note:

1. Pulse width  $\leq 300\mu s$ ; duty cycle  $\leq 2\%$ .

## Typical Characteristics

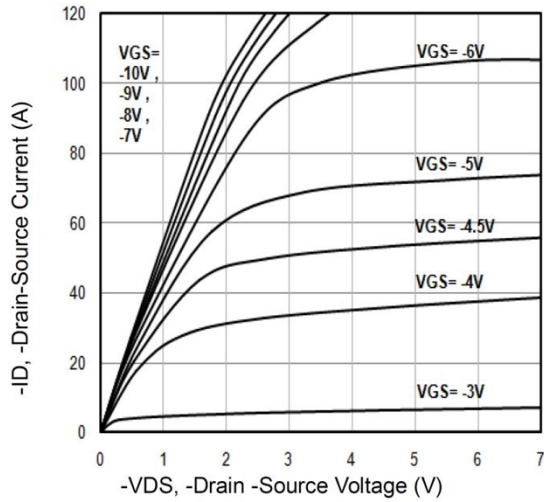


Fig1. Typical Output Characteristics

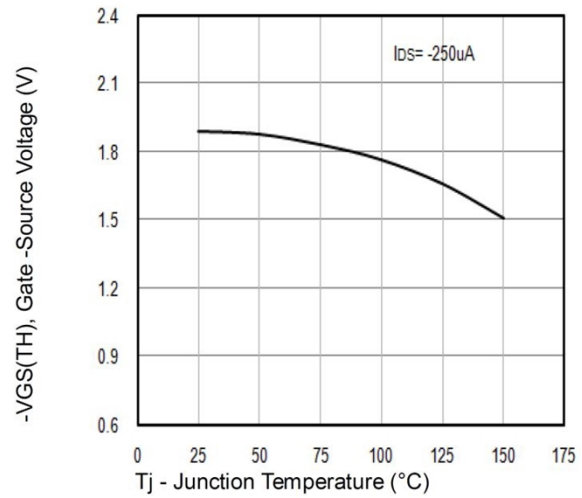


Fig2.  $-V_{GS(TH)}$  Gate -Source Voltage Vs.  $T_j$

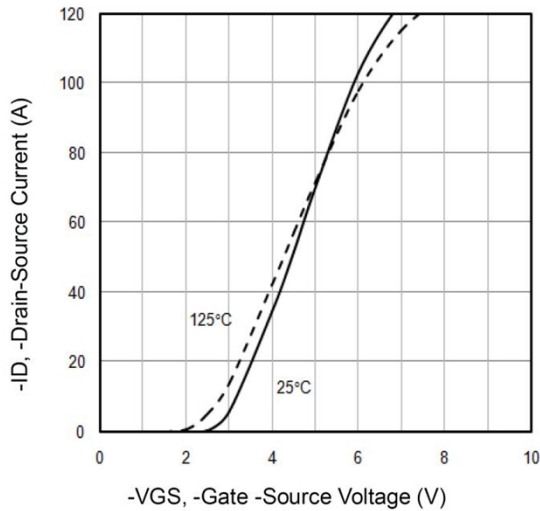


Fig3. Typical Transfer Characteristics

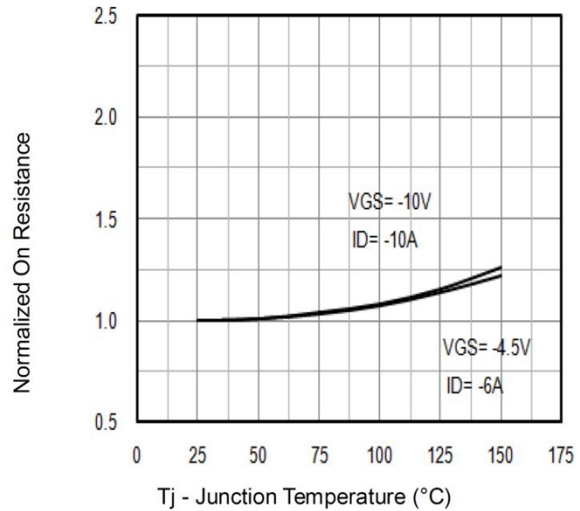


Fig4. Normalized On-Resistance Vs.  $T_j$

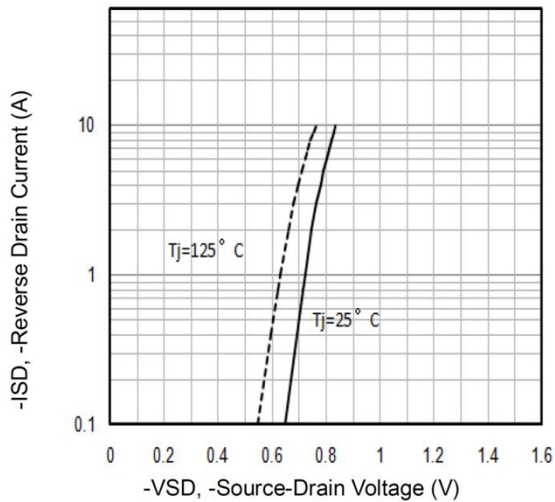


Fig5. Typical Source-Drain Diode Forward Voltage

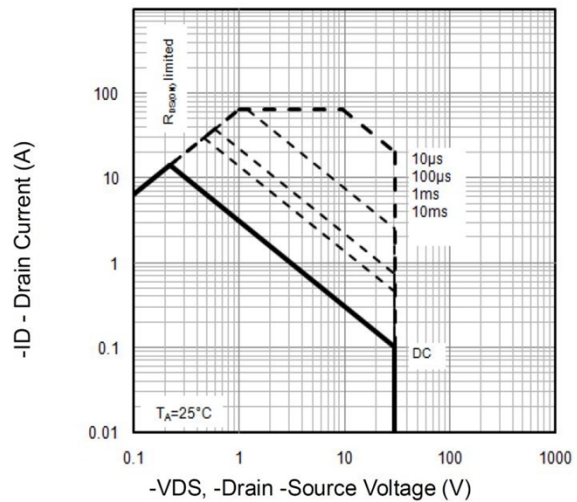
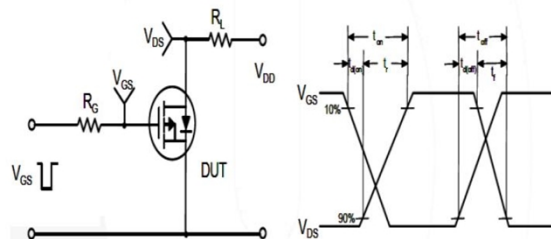
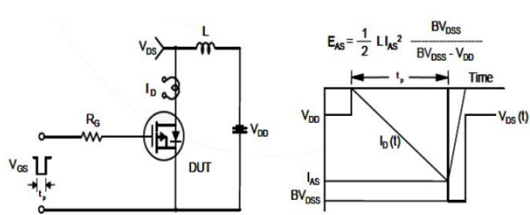
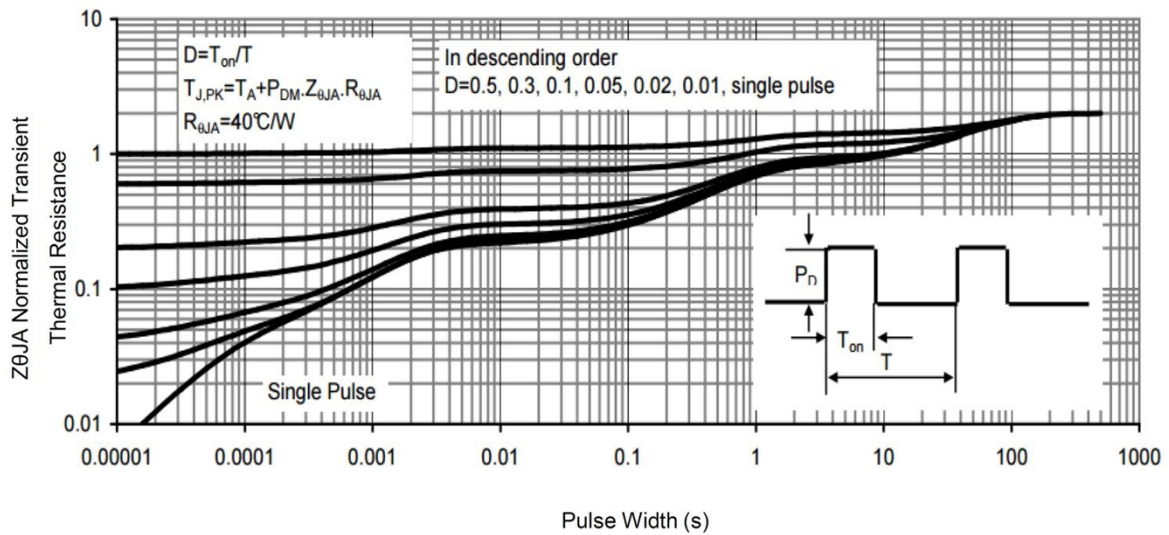
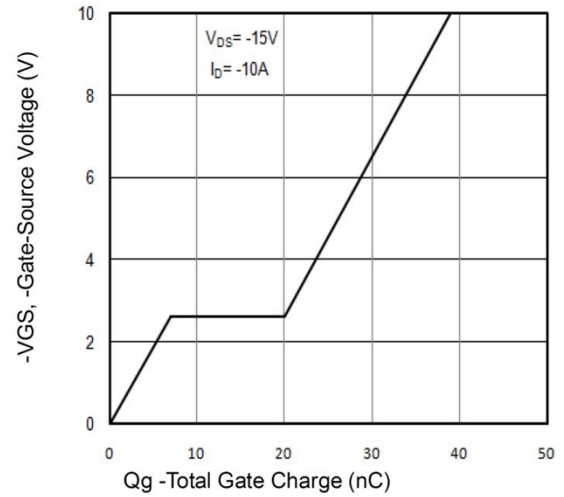
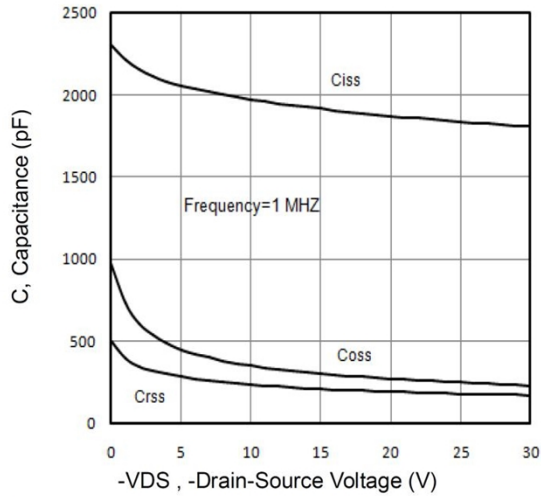
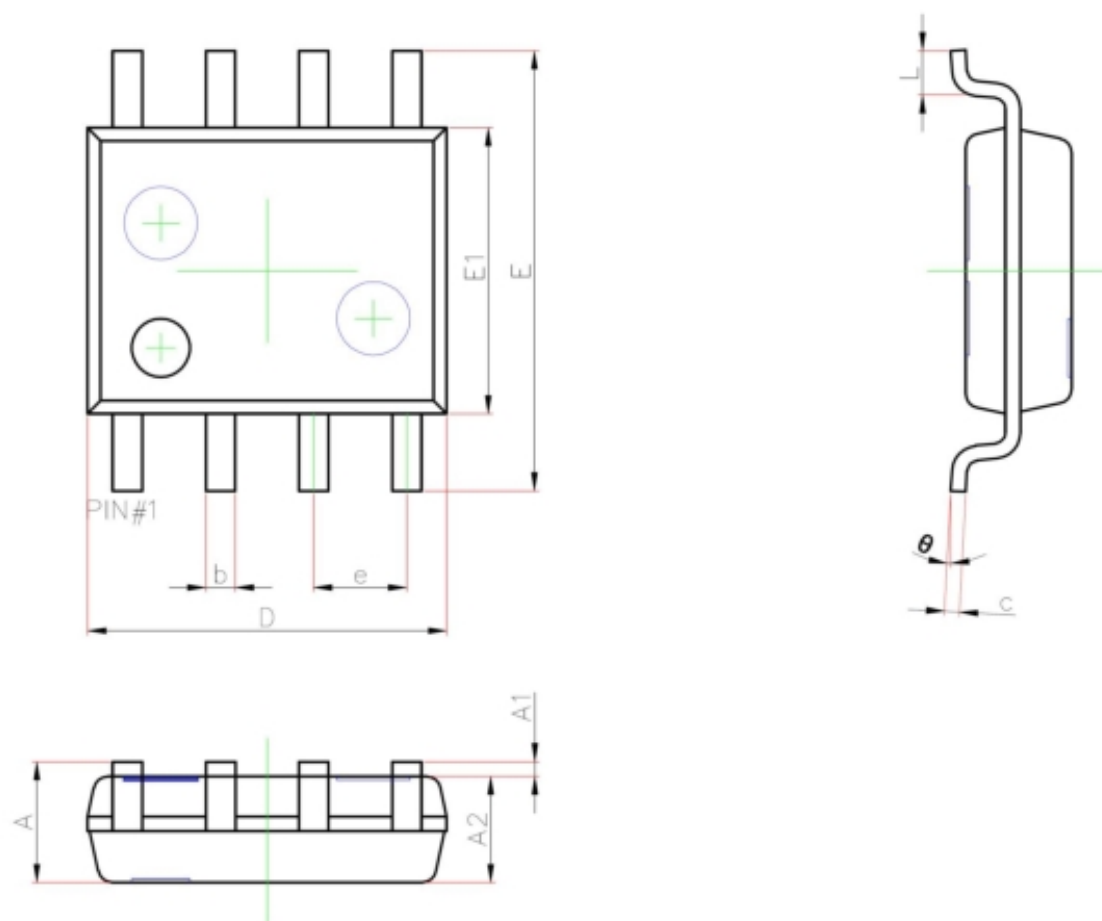


Fig6. Maximum Safe Operating Area



## SOP-8 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
$\theta$	0°	8°