



YEA SHIN TECHNOLOGY CO., LTD

YS2333

## P-Channel Enhancement MOSFET

$V_{DS} = -12V$ ,  $I_D = -6A$



### DESCRIPTION

The YS2333 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-23 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

### FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

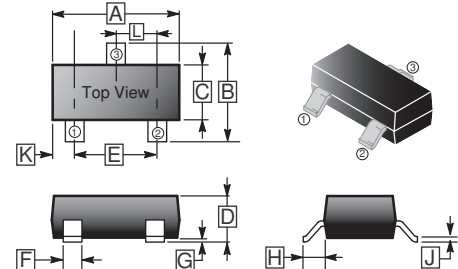
### MARKING

S33

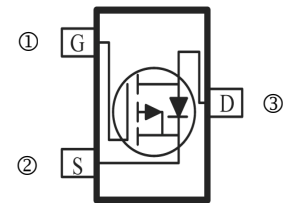
### PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

### SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.01	0.18
B	2.10	2.65	H	0.5 Typ.	
C	1.20	1.40	J	0.08	0.20
D	0.89	1.17	K	0.6 REF.	
E	1.78	2.04	L	0.95 BSC.	
F	0.30	0.50			



### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-12	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current <sup>1</sup>	$I_D$	-6	A
Pulsed Drain Current ( $t=300\mu s$ )	$I_{DM}$	-20	A
Maximum Power Dissipation <sup>2</sup>	$P_D$	0.35	W
Maximum Power Dissipation <sup>1</sup>		1.1	
Thermal Resistance Junction-Ambient <sup>2</sup>	$R_{\theta JA}$	357	$^{\circ}C / W$
Thermal Resistance Junction-Ambient <sup>1</sup>		113	
Operating Junction & Storage Temperature	$T_J, T_{STG}$	150, -55~150	$^{\circ}C$

Note :

1. Device mounted on FR-4 substrate board, with minimum recommended pad layout, single side.
2. Device mounted on no heat sink.

# YS2333

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	-12	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> = -250μA
Gate-Threshold Voltage <sup>1</sup>	V <sub>GS(th)</sub>	-0.4	-	-1	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±0.1	μA	V <sub>GS</sub> = ±8V, V <sub>DS</sub> =0
Drain-Source Leakage Current	I <sub>DSS</sub>	-	-	-1	μA	V <sub>DS</sub> = -12V, V <sub>GS</sub> =0
Forward Tranconductance <sup>1</sup>	g <sub>fs</sub>	-	18	-	S	V <sub>DS</sub> = -5V, I <sub>D</sub> = -5A
Static Drain-Source On-Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	-	-	28	mΩ	V <sub>DS</sub> = -4.5V, I <sub>D</sub> = -5A
		-	-	32		V <sub>DS</sub> = -3.7V, I <sub>D</sub> = -4.6A
		-	-	40		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -4.3A
		-	-	63		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A
		-	-	150		V <sub>GS</sub> = -1.5V, I <sub>D</sub> = -0.5A
Dynamic Parameters <sup>2</sup>						
Total Gate Charge	Q <sub>g</sub>	-	14	-	nC	I <sub>D</sub> = -5A V <sub>DS</sub> = -6V V <sub>GS</sub> = -4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	2.3	-		
Gate-Drain Change	Q <sub>gd</sub>	-	3.6	-		
Input Capacitance	C <sub>iss</sub>	-	1275	-	pF	V <sub>GS</sub> =0 V <sub>DS</sub> = -6V f =1.0MHz
Output Capacitance	C <sub>oss</sub>	-	255	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	236	-		
Gate Resistance	R <sub>g</sub>	1.9	-	19	Ω	f =1.0MHz
Turn-on Delay Time	T <sub>d(on)</sub>	-	26	-	nS	V <sub>DD</sub> = -6V V <sub>GEN</sub> = -4.5V I <sub>D</sub> = -4A R <sub>GEN</sub> =1Ω R <sub>L</sub> =6Ω
Rise Time	T <sub>r</sub>	-	24	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	45	-		
Fall Time	T <sub>f</sub>	-	20	-		
Source-Drain Diode						
Forward Current	I <sub>S</sub>	-	-	-1.4	A	T <sub>C</sub> = 25℃
Pulsed Forward Current	I <sub>SM</sub>	-	-	-20	A	
Forward Voltage <sup>1</sup>	V <sub>DS</sub>	-	-	-1.2	V	V <sub>GS</sub> =0, I <sub>S</sub> = -4A
Reverse Recovery Time <sup>2</sup>	T <sub>rr</sub>	-	24	48	nS	I <sub>F</sub> = -4A, dI/dt=100A/μs
Reverse Recovery Charge <sup>2</sup>	Q <sub>rr</sub>	-	8	16	nC	

Note:

1. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.

## CHARACTERISTIC CURVES

