

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS2333 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

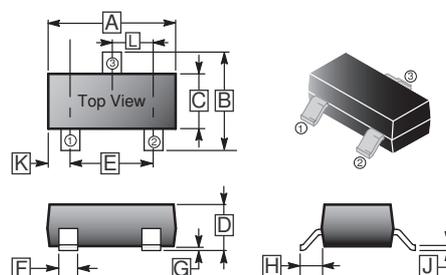
MARKING

S33

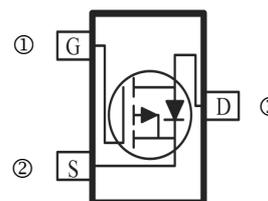
PACKAGE INFORMATION

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	0.09	0.18
B	2.10	2.65	H	0.35	0.65
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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

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

Note :

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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-12	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Gate-Threshold Voltage ¹	$V_{GS(th)}$	-0.4	-	-1	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 0.1	μA	$V_{GS} = \pm 8\text{V}, V_{DS}=0$
Drain-Source Leakage Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -12\text{V}, V_{GS}=0$
Forward Transconductance ¹	g_{fs}	-	18	-	S	$V_{DS} = -5\text{V}, I_D = -5\text{A}$
Static Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	28	m Ω	$V_{DS} = -4.5\text{V}, I_D = -5\text{A}$
		-	-	32		$V_{DS} = -3.7\text{V}, I_D = -4.6\text{A}$
		-	-	40		$V_{GS} = -2.5\text{V}, I_D = -4.3\text{A}$
		-	-	63		$V_{GS} = -1.8\text{V}, I_D = -1\text{A}$
		-	-	150		$V_{GS} = -1.5\text{V}, I_D = -0.5\text{A}$
Dynamic Parameters ²						
Total Gate Charge	Q_g	-	14	-	nC	$I_D = -5\text{A}, V_{DS} = -6\text{V}$ $V_{GS} = -4.5\text{V}$
Gate-Source Charge	Q_{gs}	-	2.3	-		
Gate-Drain Charge	Q_{gd}	-	3.6	-		
Input Capacitance	C_{iss}	-	1275	-	pF	$V_{GS} = 0$ $V_{DS} = -6\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	255	-		
Reverse Transfer Capacitance	C_{rss}	-	236	-		
Gate Resistance	R_g	1.9	-	19	Ω	$f = 1.0\text{MHz}$
Turn-on Delay Time	$T_{d(on)}$	-	26	-	nS	$V_{DD} = -6\text{V}$ $V_{GEN} = -4.5\text{V}$ $I_D = -4\text{A}$ $R_{GEN} = 1\Omega$ $R_L = 6\Omega$
Rise Time	T_r	-	24	-		
Turn-off Delay Time	$T_{d(off)}$	-	45	-		
Fall Time	T_f	-	20	-		
Source-Drain Diode						
Forward Current	I_S	-	-	-1.4	A	$T_C = 25^\circ\text{C}$
Pulsed Forward Current	I_{SM}	-	-	-20	A	
Forward Voltage ¹	V_{DS}	-	-	-1.2	V	$V_{GS} = 0, I_S = -4\text{A}$
Reverse Recovery Time ²	T_{rr}	-	24	48	nS	$I_F = -4\text{A}, dI/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge ²	Q_{rr}	-	8	16	nC	

Note:

1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVES

