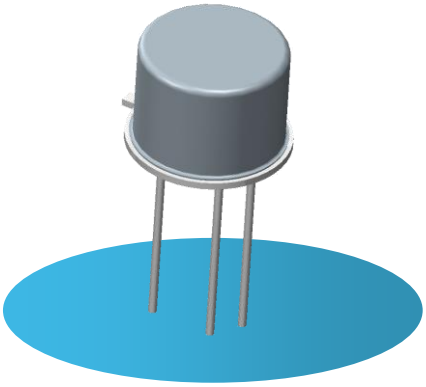
N-Channel Enhancement Mode Power MOSFET

SIMFSBSS123T2



- Hermetic TO39 (TO205AD) Package
- V_{DS} = 100V , I_D = 0.43A, $R_{DS(ON)}$ = 6.0Ω
- Fast Switching
- Integral Source-Drain Body Diode
- High Reliability and Screening Options Available

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise stated)

V_{DS}	Drain - Source Voltage	100V
V_{GS}	Gate - Source Voltage	±20V
I_D [(1)]	Continuous Drain Current T_C = 25°C	0.43A
I_{DM} [(1)(2)]	Pulsed Drain Current	0.575A
P_D	Total Power Dissipation at $T_C \leq 25°C$	2.5W
	De-rate $T_C > 25°C$	20mW/°C
T_J	Operating Temperature Range	-65 to +150°C
T_{stg}	Storage Temperature Range	-65 to +150°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	50	°C/W

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions		Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0	I_D = 250µA	100	103		V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 1.0mA	0.8	1.68	2.0	V
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V	V_{DS} = 0		±0.16	±50	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20V	V_{GS} = 0		0.003	10	nA
		V_{DS} = 100V	V_{GS} = 0		0.017	1.0	µA
			T_C = 125°C		0.059	60	
$I_{D(ON)}$ (3)	On-State Drain Current	V_{DS} = 5.0V	V_{GS} = 10V	0.68	>1.0		A
$R_{DS(on)}$ (3)	Static Drain-Source On-State Resistance	V_{GS} = 4.5V	I_D = 0.17A		1.28	10	Ω
		V_{GS} = 4.5V	I_D = 0.43A		1.3		
		V_{GS} = 10V	I_D = 0.17A		1.19	6.0	
			T_C = 125°C		1.78	12	
		V_{GS} = 10V	I_D = 0.43A		1.2		
g_{fs} (3)	Forward Transconductance	V_{DS} = 10V	I_D = 0.17A	80	646		m℧
		V_{DS} = 10V	I_D = 0.43A		940		
V_{SD} (3)	Body Diode Forward Voltage	V_{GS} = 0	I_S = 0.34A		0.81	1.3	V
		V_{GS} = 0	I_S = 0.575A		0.88		
t_{rr} (4)	Body Diode Reverse Recovery	I_F = 0.17A	d_{iF}/d_t = 100A/µs		11		nS
Q_{rr} (4)	Body Diode Reverse Recovery Charge				3		nC

DYNAMIC CHARACTERISTICS

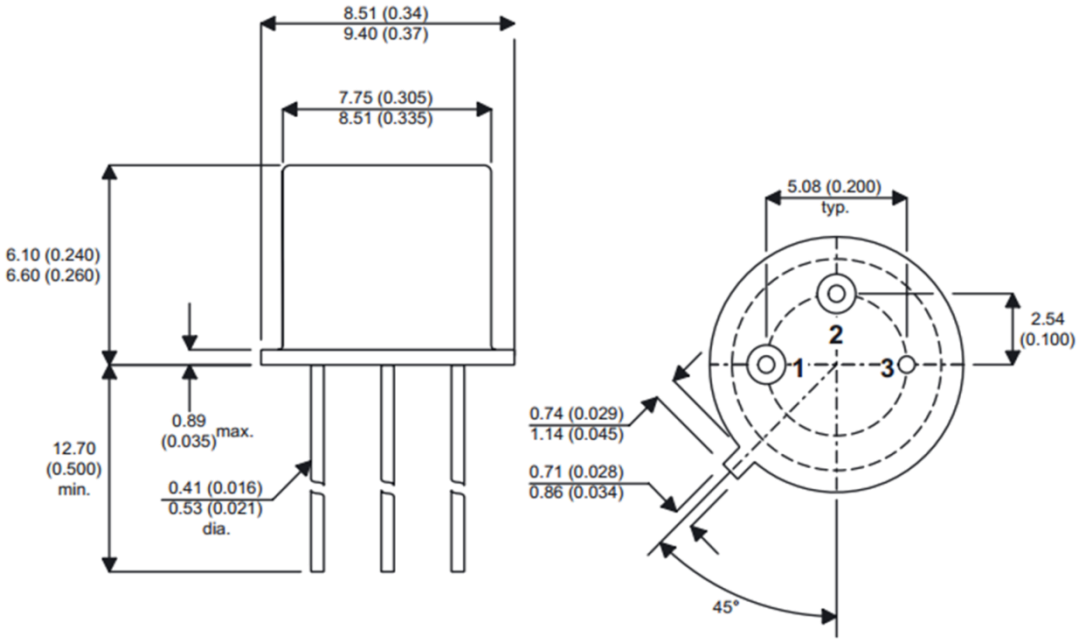
C_{iss}	Input Capacitance	V_{GS} = 0		73		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		7		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		3.4		
t_d	Turn-On Delay Time	V_{DD} = 30V		3	3.4	ns
t_r	Turn-On Rise Time	V_{GS} = 10V		2	18	
t_s	Turn-Off Storage Time	I_D = 0.28A		7	31	
t_f	Turn-Off Fall Time	R_G = 6Ω		2	5	

Notes

(1) Limited by maximum junction temperature
(2) 10ms Pulse
(3) Pulse Width ≤ 380us, δ ≤ 2%
(4) By Design. Parameter not tested.

MECHANICAL DATA

Dimensions in mm (inches)



Package Outline: TO39 (TO-205AD)

PACKAGE PIN CONNECTIONS

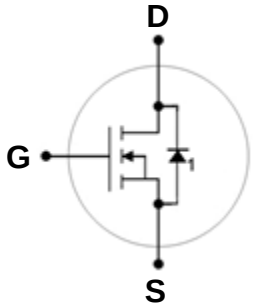
Pin	Connection
1	Source
2	Gate
3 / CASE	Drain

PART NUMBER VARIANTS

Part Number Reference	Termination Finish	SML ROHS
SIMFSBSS123T2**A**	Pre-tinned 63% Tin, 37% Lead	LD[3]
SIMFSBSS123T2**B**	Pre-tinned 96.5% Tin, 3% Silver, 0.5% Copper	R1[3]

Notes:

1. Specify lead finish option by part number at point of order
2. All design variants contain Lead (Pb) within the construction of the device. The Lead content is fully RoHS compliant but using an exemption as currently understood from the EU directive 2011/65/EU (Annex III, exemption 7a).
3. LD = e0, R1 = e1, as defined in J-STD-609 2nd Level Interconnect Category.



1- Body Diode