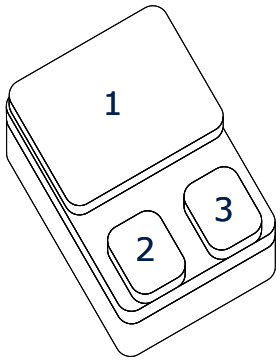
HiRel RadHard Power-MOS



- Low $R_{DS(on)}$
- Single Event Effect (SEE) hardened
  LET 55, Range: 90µm
  V_{GS} = -20V, V_{DS} = 100V, approved
- Total Ionisation Dose (TID) hardened
  100 kRad approved (Level R)
- Hermetically sealed
- N-channel
- esa **Space Qualified**
  ESCC Detail Spec. No.: 5205/028

Type	Marking	Pin Configuration				Package
		1	2	3	-	
BUY10CS12J-01	-	D	G	S	-	SMD05

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain Source Voltage	V_{DS}	100	V
Gate Source Voltage	V_{GS}	+/- 20	V
Drain Gate Voltage	V_{DG}	100	V
Continuous Drain Current T_C = 25 °C T_C = 100 °C	I_D	 12.4 8	A
Continuous Source Current	I_S	12.4	A
Drain Current Pulsed, t_p limited by T_{jmax}	I_{DM}	50	Apk
Total Power Dissipation [1)]	P_{tot}	75	W
Operating and Storage Temperature	T_{op}	-55 to + 150	°C
Avalanche Energy	E_{AS}	60	mJ

Thermal Characteristics

Thermal Resistance (Junction to Case)	$R_{th\ JC}$	1.66	K/W
Soldering Temperature	T_{sol}	250	°C

Notes.:

1) For $T_S \leq 25°C$. For $T_S > 25°C$ derating is required.

Electrical Characteristics, at T_A=25°C; unless otherwise specified

Parameter	Symbol	Values		Unit
		min.	max.	
DC Characteristics				
Breakdown Voltage Drain to Source I_D = 0.25mA, V_{GS} = 0V	B_{VDSS}	100	-	V
Gate Threshold Voltage I_D = 1.0mA, $V_{DS} \geq V_{GS}$	$V_{GS(th)}$	2.0	4.0	V
Gate to Source Leakage Current V_{DS} = 0V, V_{GS} = +/- 20V	I_{GSS}	-	+/-100	nA
Drain Current V_{DS} = 80V, V_{GS} = 0V	I_{DSS}	-	25	µA
Drain Source On Resistance [1] V_{GS} = 10V, I_D = 8A	$r_{DS(ON)}$	-	0.13	Ω
Source Drain Diode, Forward Voltage [1), 2)] V_{GS} = 0V, I_S = 12.4A	V_{SD}	-	1.2	V
AC Characteristics				
Turn-on Delay Time V_{DD} = 50% V_{DS}, I_D = 8A, R_G = 4.7Ω	$t_{d(ON)}$	-	25	ns
Rise Time V_{DD} = 50% V_{DS}, I_D = 8A, R_G = 4.7Ω	t_r	-	35	ns
Turn-off Delay Time V_{DD} = 50% V_{DS}, I_D = 8A, R_G = 4.7Ω	$t_{d(OFF)}$	-	35	ns
Fall Time V_{DD} = 50% V_{DS}, I_D = 8A, R_G = 4.7Ω	t_f	-	20	ns
Reverse Recovery Time V_{DD} < 50% V_{DS}, I_D = 12.4A	t_{rr}	-	-	ns
Common Source Input Capacitance V_{DS} = 100V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	1300	1900	pF
Common Source Output Capacitance V_{DS} = 100V, V_{GS} = 0V, f = 1.0MHz	C_{oss}	90	150	pF
Common Source Reverse Transfer Capacitance V_{DS} = 100V, V_{GS} = 0V, f = 1.0MHz	C_{rss}	1	6	pF
Total Gate Charge V_{DD} = 50% V_{DS}, V_{GS} = 10V, I_D = 12.4A	Q_G	-	-	nC

Notes.:
1) Pulsed Measurement: Pulse Width < 300µs, Duty Cycle <2.0%.
2) Measured within 2.0 mm of case.

Electrical Characteristics

at T_A=125°C; unless otherwise specified

Parameter	Symbol	Values		Unit
		min.	max.	
DC Characteristics				
Gate Threshold Voltage I_D = 1.0mA, $V_{DS} \geq V_{GS}$	$V_{GS(th)}$	1.5	-	V
Gate to Source Leakage Current V_{DS} = 0V, V_{GS} = +/- 20V	I_{GSS}	-	+/-200	nA
Drain Current V_{DS} = 80V, V_{GS} = 0V	I_{DSS}	-	250	µA
Drain Source On Resistance [1)] V_{GS} = 10V, I_D = 8A	$r_{DS(ON)}$	-	0.3	Ω

Notes.:

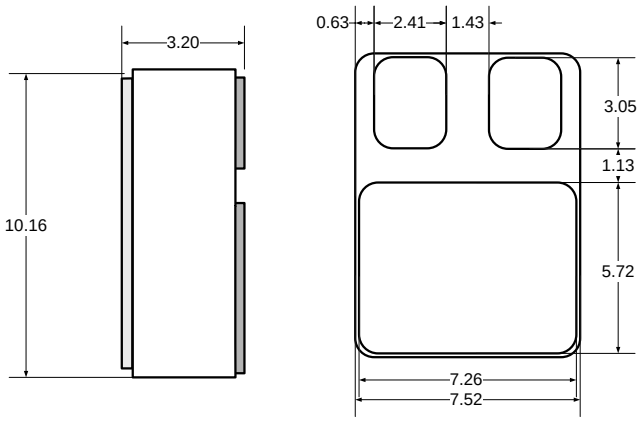
1) Pulsed Measurement: Pulse Width < 300µs, Duty Cycle <2.0%.

Electrical Characteristics

at T_A=-55°C; unless otherwise specified

Parameter	Symbol	Values		Unit
		min.	max.	
DC Characteristics				
Gate Threshold Voltage I_D = 1.0mA, $V_{DS} \geq V_{GS}$	$V_{GS(th)}$	-	5.0	V

SMD05 Package



Dimensions are typical [mm]

Edition 2012-04
Published by
Infineon Technologies AG
85579 Neubiberg, Germany

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