MTM23123

Silicon P-channel MOSFET

For digital circuits

■ Features

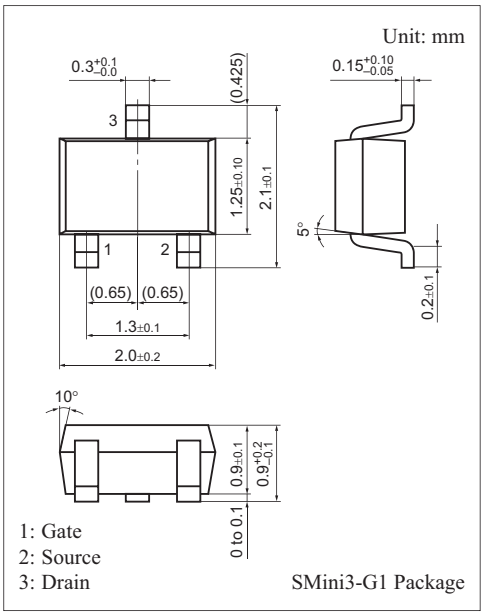
- Low voltage drive (2.5 V, 4 V)
- Realization of low on-resistance, using extremely fine process (14 mΩ/mm^2)

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V_{DSS}	–20	V
Gate-source surrender voltage	V_{GSS}	±10	V
Drain current	I_D	–3.0	A
Peak drain current *1	I_{DP}	–16	A
Power dissipation *2	P_D	500	mW
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

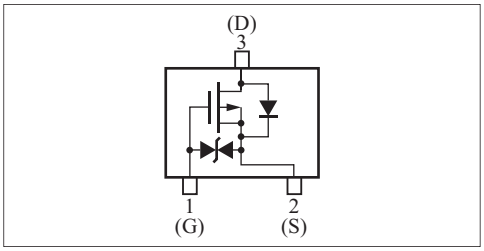
Note) ∗1: Pulse width ≤ 10 μs, Duty Cycle ≤ 1%

∗2: Measuring on ceramic substrate at 40 mm × 38 mm × 0.1 mm
Absolute maximum rating without heat sink for P_D is 150 mW



Marking Symbol: BL

Internal Connection



■ Electrical Characteristics $T_a = 25°C \pm 3°C$

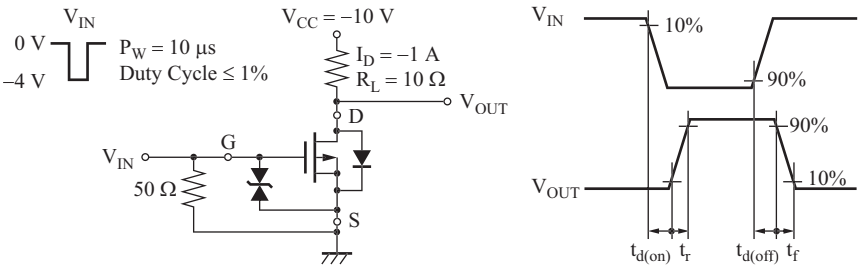
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = -1$ mA, $V_{GS} = 0$	–20			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = -20$ V, $V_{GS} = 0$			–1.0	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 8$ V, $V_{DS} = 0$			±10	μA
Gate threshold voltage	V_{TH}	$I_D = -1.0$ mA, $V_{DS} = -10.0$ V	– 0.4	– 0.85	–1.3	V
Drain-source ON resistance *1	$R_{DS(on)}$	$I_D = -1$ A, $V_{GS} = -4.0$ V		40	55	mΩ
		$I_D = -0.5$ A, $V_{GS} = -2.5$ V		45	70	
Forward transfer admittance *1	$\lvert Y_{fs} \rvert$	$I_D = -1.0$ A, $V_{DS} = -10$ V, f = 1 kHz	3.5			S
Short-circuit forward transfer capacitance (Common source)	C_{iss}	$V_{DS} = -10$ V, $V_{GS} = 0$, f = 1 MHz		1 000		pF
Short-circuit output capacitance (Common source)	C_{oss}			120		pF
Reverse transfer capacitance (Common source)	C_{rss}			120		pF
Turn-on delay time *2	$t_{d(on)}$	$V_{DD} = -10$ V, $V_{GS} = 0$ V to –4 V, $I_D = -1$ A		25		ns
Rise time *2	t_r	$V_{DD} = -10$ V, $V_{GS} = 0$ V to –4 V, $I_D = -1$ A		25		ns
Fall time *2	t_f	$V_{DD} = -10$ V, $V_{GS} = -4$ V to 0 V, $I_D = -1$ A		70		ns
Turn-off delay time *2	$t_{d(off)}$	$V_{DD} = -10$ V, $V_{GS} = -4$ V to 0 V, $I_D = -1$ A		120		ns

■ Electrical Characteristics (continued) $T_a = 25°C \pm 3°C$

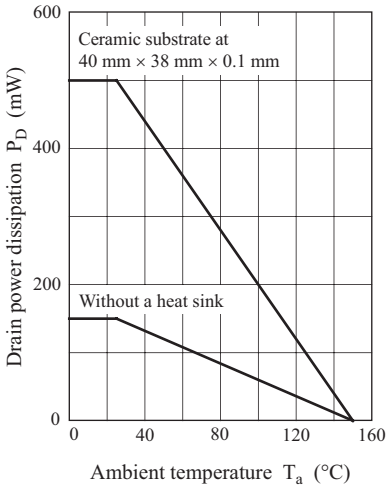
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. ∗1: Pulse measurement: Pulse width < 300 μs, Duty Cycle < 2.0%

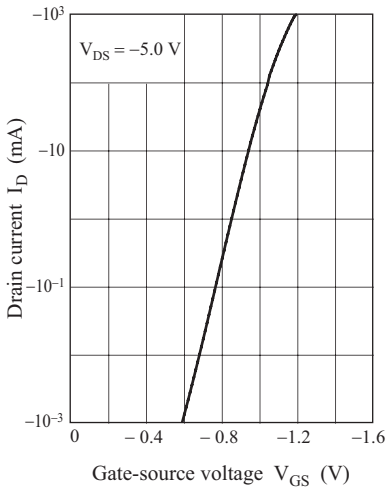
∗2: Measurement circuit



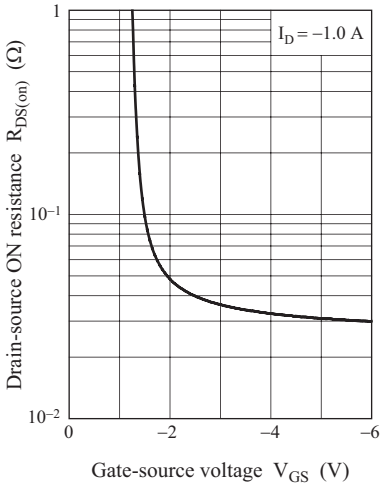
P_D — T_a



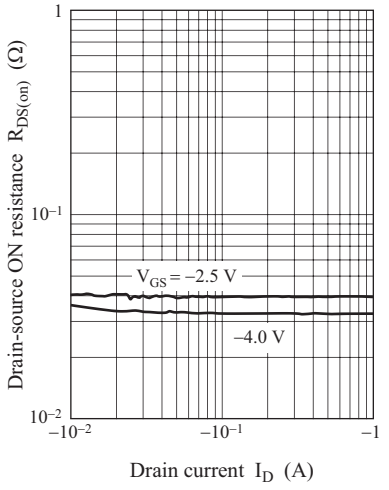
I_D — V_{GS}



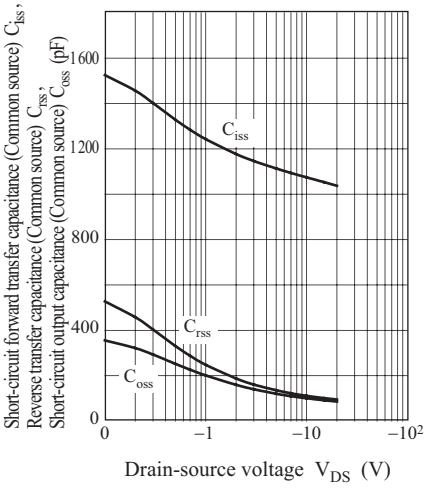
$R_{DS(on)}$ — V_{GS}



$R_{DS(on)}$ — I_D



C_{iss} , C_{rss} , C_{oss} — V_{DS}



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