

2SK4174

Silicon N-channel enhancement MOS FET

For high speed switching circuits

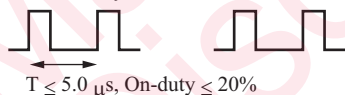
■ Features

- Gate-source surrender voltage $V_{GSS} : \pm 25$ V guaranteed
- Avalanche energy capability guaranteed: $EAS > 216$ mJ
- High-speed switching: $t_f = 90$ ns (typ.)

■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V_{DSS}	110	V
Gate-source surrender voltage	V_{GSS}	± 25	V
Drain current	I_D	± 28	A
Peak drain current *	I_{DP}	± 130	A
Avalanche energy capability	EAS	216	mJ
Avalanche energy capability *	EAR	69	mJ
Drain power dissipation	P_D	40	W
		$T_a = 25^\circ\text{C}$	2.0
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note) *: Assurance of repetitive pulse. (Repetitive period ≤ 5 μs on-duty $\leq 20\%$)
 But, it must stay within 40% of all that the time impressed pulse repetitively.



■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

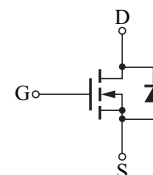
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = 1$ mA, $V_{GS} = 0$	110			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 88$ V, $V_{GS} = 0$			1.0	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 25$ V, $V_{DS} = 0$			± 1.0	μA
Gate threshold voltage	V_{th}	$V_{DS} = 10$ V, $I_D = 1.0$ mA	2.0		4.0	V
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 14.0$ A		38	52	$\text{m}\Omega$
Forward transfer conductance	$ Y_{fs} $	$V_{DS} = 10$ V, $I_D = 14.0$ A	14	21		S
Short-circuit input capacitance (Common source)	C_{iss}	$V_{DS} = 10$ V, $V_{GS} = 0$, $f = 1$ MHz		1 500		pF
Short-circuit output capacitance (Common source)	C_{oss}			500		pF
Reverse transfer capacitance (Common source)	C_{rss}			180		pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30$ V, $I_D = 14.0$ A $R_L \approx 2.2$ Ω , $V_{GS} = 10$ V		30		ns
Rise time	t_r			50		ns
Turn-off delay time	$t_{d(off)}$			150		ns
Fall time	t_f			90		ns

■ Package

- Code
TO-220D-A1
- Pin Name
1: Gate
2: Drain
3: Source

■ Marking Symbol: K4174

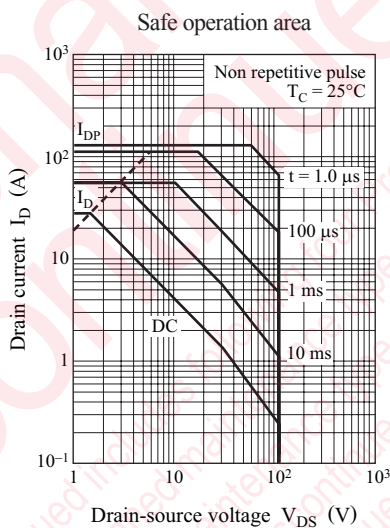
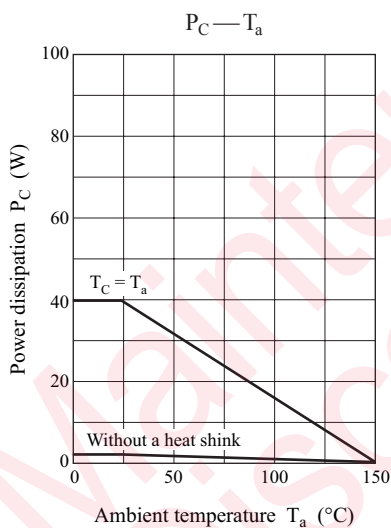
■ Internal Connection



■ Electrical Characteristics (continued) $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

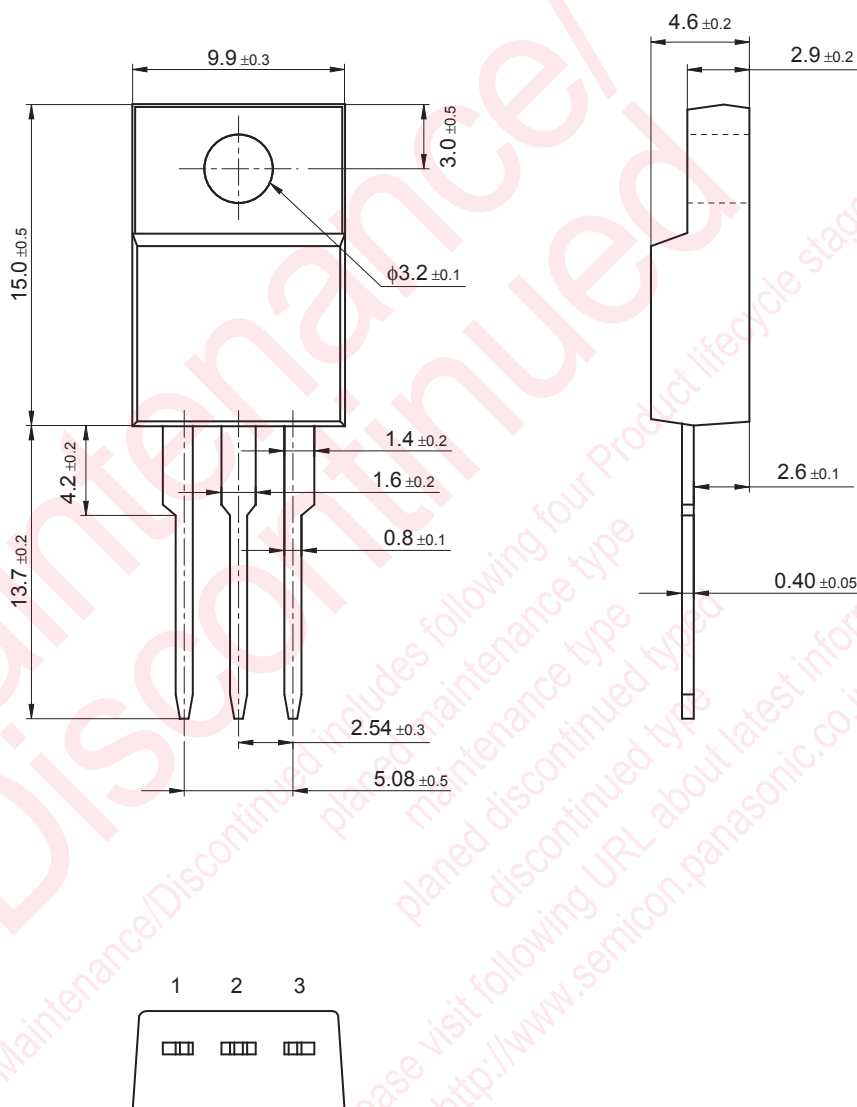
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode forward voltage	V_{DSF}	$I_{DR} = 28\text{ A}, V_{GS} = 0$		1.0	1.4	V
Reverse recovery time	t_{rr}	$L = 230\ \mu\text{H}, V_{DD} = 100\text{ V}$		75		ns
Reverse recovery charge	Q_{rr}	$I_{DR} = 14.0\text{ A}, d_i/d_t = 100\text{ A}/\mu\text{s}$		0.3		nC
Gate charge load	Q_g	$V_{DD} = 30\text{ V}, I_D = 14.0\text{ A}, V_{GS} = 10\text{ V}$		64		nC
Gate-source charge	Q_{gs}		6.0		nC	
Gate-drain charge	Q_{gd}		28.5		nC	
Thermal resistance (ch-c)	$R_{th(ch-c)}$				3.13	$^\circ\text{C}/\text{W}$
Thermal resistance (ch-a)	$R_{th(ch-a)}$				62.5	$^\circ\text{C}/\text{W}$

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



TO-220D-A1

Unit: mm



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