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# UP0187B

## Silicon N-channel MOSFET

For switching circuits

### ■ Features

- High-speed switching
- Incorporating a built-in gate protection-diode
- Two elements incorporated into one package
- SSMini type package, reduction of the mounting area and assembly cost

### ■ Basic Part Number

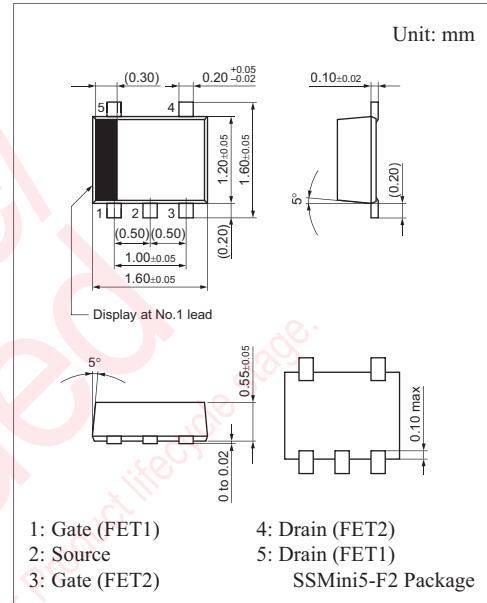
- 2SK3938 × 2

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

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	30	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 12$	V
Drain current	$I_D$	100	mA
Peak drain current	$I_{DP}$	200	mA
Total power dissipation	$P_T$	125	mW
Channel temperature	$T_{ch}$	125	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$

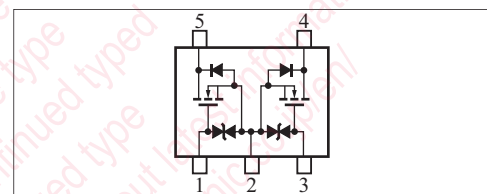
### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = 10 \mu\text{A}, V_{GS} = 0$	30			V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 20 \text{ V}, V_{GS} = 0$			1.0	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 10 \text{ V}, V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Gate threshold voltage	$V_{TH}$	$I_D = 1.0 \text{ mA}, V_{DS} = 3.0 \text{ V}$	0.5	1.0	1.5	V
Drain-source ON resistance	$R_{DS(on)}$	$I_D = 10 \text{ mA}, V_{GS} = 2.5 \text{ V}$		7	12	$\Omega$
		$I_D = 10 \text{ mA}, V_{GS} = 4.0 \text{ V}$		5	8	
Forward transfer admittance	$ Y_{fs} $	$I_D = 10 \text{ mA}, V_{DS} = 3 \text{ V}, f = 1 \text{ kHz}$	20	55		mS
Short-circuit input capacitance (Common source)	$C_{iss}$	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$		12		pF
Short-circuit output capacitance (Common source)	$C_{oss}$			10		pF
Reverse transfer capacitance (Common source)	$C_{rss}$			6		pF
Turn-on time *	$t_{on}$	$V_{DD} = 3 \text{ V}, V_{GS} = 0 \text{ V to } 3 \text{ V}, I_D = 10 \text{ mA}$		350		ns
Turn-off time *	$t_{off}$	$V_{DD} = 3 \text{ V}, V_{GS} = 3 \text{ V to } 0 \text{ V}, I_D = 10 \text{ mA}$		350		ns



Marking Symbol: 4M

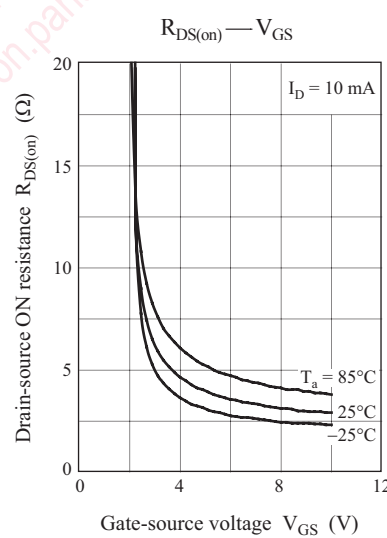
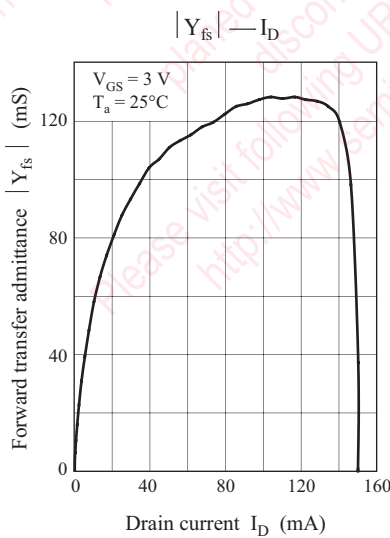
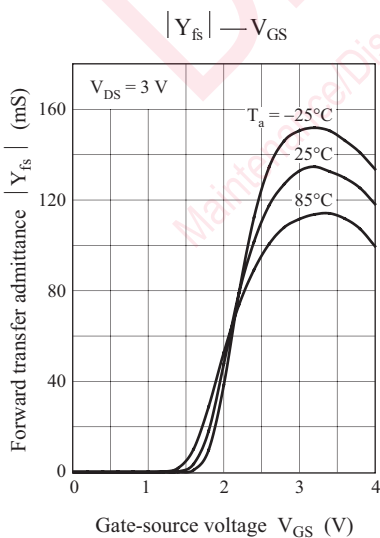
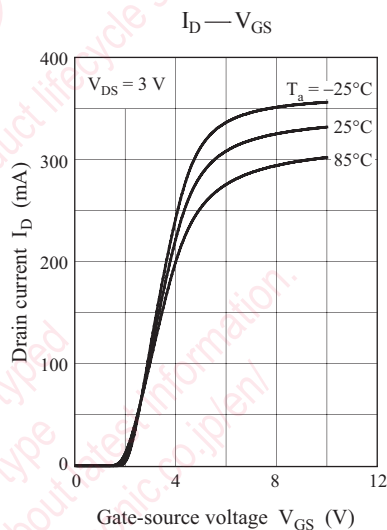
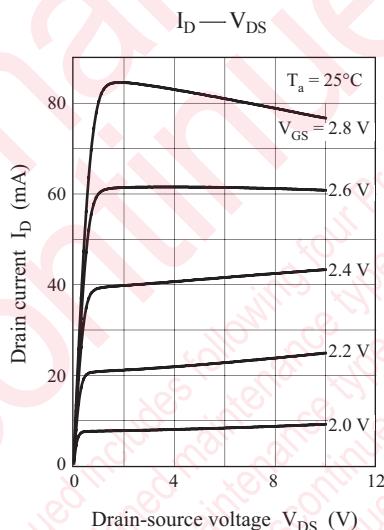
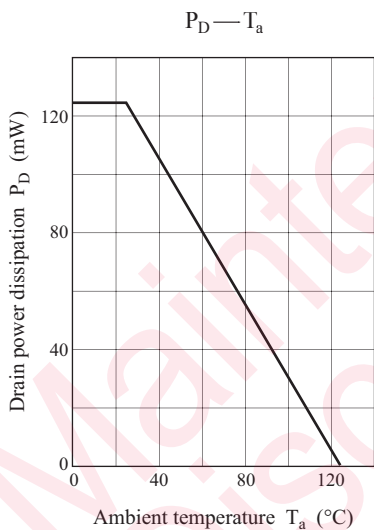
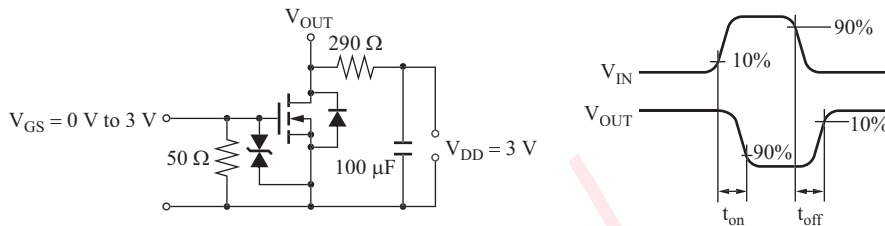
Internal Connection



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

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

2. \* :  $t_{on}$ ,  $t_{off}$  measurement circuit



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