SK840303

Silicon N-channel MOS FET

For DC-DC converter circuits

■ Overview

SK840303 is the N-channel MOS FET that is highly suitable for DC-DC converter and other switching circuits.

■ Features

- Low drain-source ON resistance:$R_{DS(on)}$ typ. = 6 mΩ (V_{GS} = 4.5 V)
- Small package with back side heat sink for improved heat dissipation.
- Eco-friendly Halogen-free package

■ Packaging

SK8403030L Embossed type (Thermo-compression sealing): 3 000 pcs / reel (standard)

■ Absolute Maximum Ratings T_a = 25°C

Parameter		Symbol	Rating	Unit
Drain-source surrender voltage		V_{DSS}	33	V
Gate-source surrender voltage		V_{GSS}	±20	V
Drain current		I_D	22	A
Peak drain current *1, 2		I_{DP}	66	A
Power dissipation	T_C = 25°C	P_D	28	W
	t = 10 s *1, 2		2	
Repetitive peak avalanche current *3		I_{AR}	22	A
Avalanche energy capability *4		EAS	50	mJ
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

Note) *1: Mounted on a glass epoxy PC board: 25.4 mm × 25.4 mm × 0.8 mm

*2: Pulse measurement: Channel temperature not to exceed 150°C

*3: V_{DD} = 24 V, V_{GS} = 10 V → 0 V, L = 0.1 mH, Tch = 25°C (initial)

*4: V_{DD} = 24 V, V_{GS} = 10 V → 0 V, L = 0.1 mH, I_{AR} =15 A, Tch = 25°C (initial)

■ Package

- Code
  HSSO8-F1-B

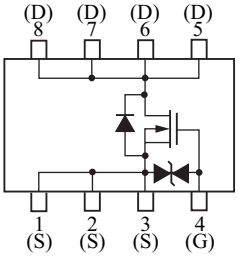
  Package dimension clicks here.→

- Pin Name

1: Source	5: Drain
2: Source	6: Drain
3: Source	7: Drain
4: Gate	8: Drain

■ Marking Symbol: 03

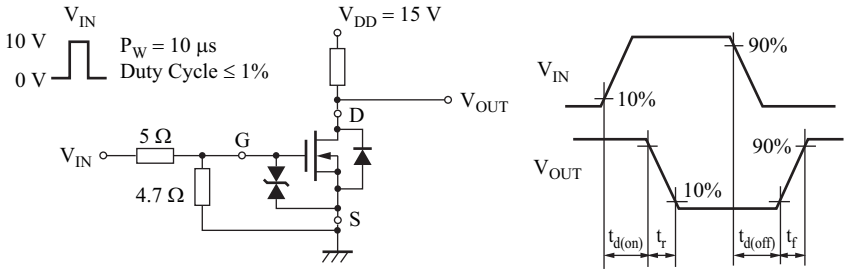
■ Internal Connection



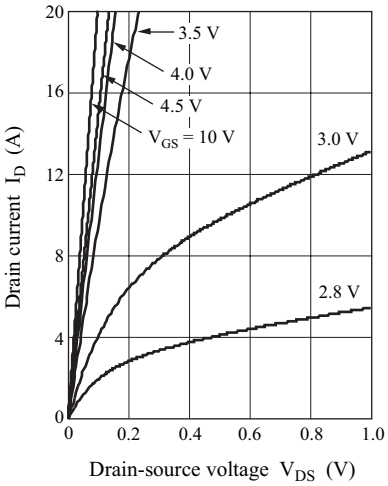
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source surrender voltage	V_{DSS}	I_D = 1 mA, V_{GS} = 0 V	33			V
Drain-source cutoff current	I_{DSS}	V_{DS} = 33 V, V_{GS} = 0 V			10	μA
Gate-source cutoff current	I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0 V			±10	μA
Gate-source threshold voltage	$V_{GS(th)}$	I_D = 2.3 mA, V_{DS} = 10 V	1		2.5	V
Drain-source ON resistance	$R_{DS(on)}$	I_D = 11 A, V_{GS} = 10 V		4	6	mΩ
		I_D = 11 A, V_{GS} = 4.5 V		6	9	
	$\|Y_{fs}\|$	I_D = 11 A, V_{GS} = 10 V		90		S
Dynamic Characteristics						
Short-circuit input capacitance (Common source)	C_{iss}	V_{DS} = 10 V, V_{GS} = 0 V, f = 1 MHz	850	1450	2050	pF
Short-circuit output capacitance (Common source)	C_{oss}		190	320	450	pF
Reverse transfer capacitance (Common source)	C_{rss}		40	110	180	pF
Signal source resistance	R_g	f = 8 MHz		2.8	5	Ω
Turn-on delay time *	$t_{d(on)}$	V_{DD} = 15 V, V_{GS} = 0 V to 10 V, I_D = 11 A		8		ns
Rise time *	t_r			7		ns
Turn-off delay time *	$t_{d(off)}$	V_{DD} = 15 V, V_{GS} = 10 V to 0 V, I_D = 11 A		40		ns
Fall time *	t_f			6		ns
Gate charge load	Q_g	V_{DD} = 15 V, V_{GS} = 0 V to 4.5 V, I_D = 22 A		10		nC
Gate-source charge	Q_{gs}			5		nC
Gate-drain charge	Q_{gd}			3		nC
Body diode characteristics						
Drain-source voltage	V_{SD}	I_S = 11 A, V_{GS} = 0 V		0.8	1.2	V

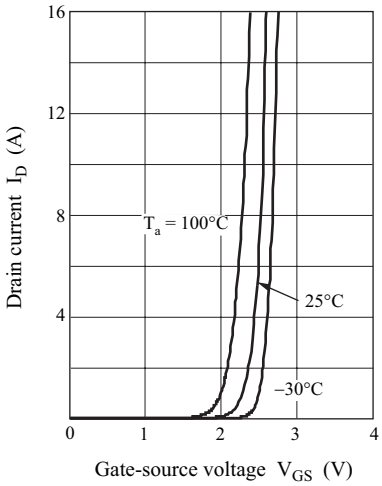
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Measurement circuit



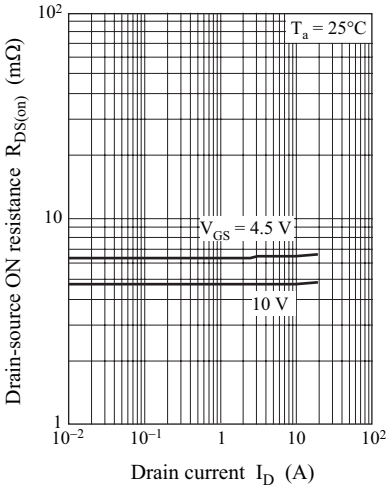
I_D — V_{DS}



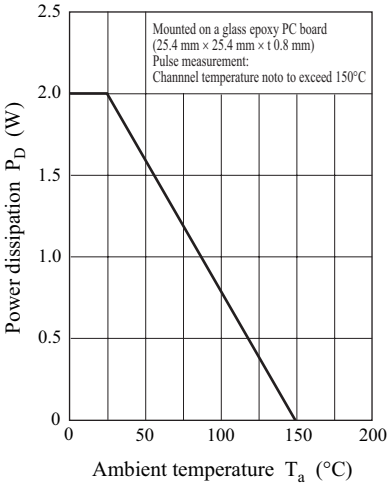
I_D — V_{GS}



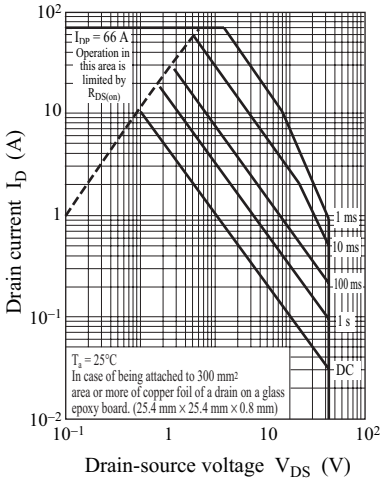
$R_{DS(on)}$ — I_D



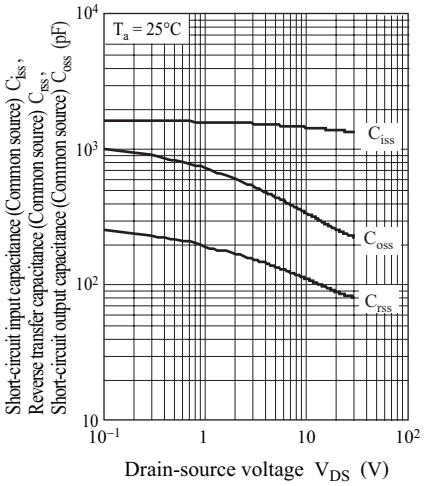
P_D — T_a



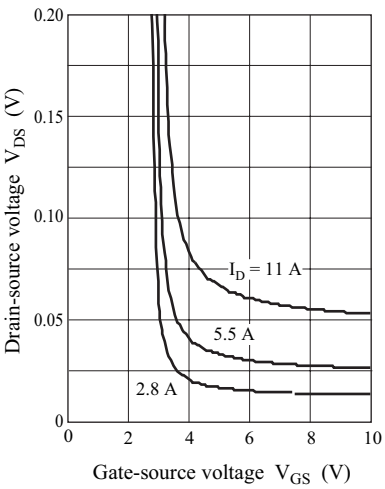
Safe operation area



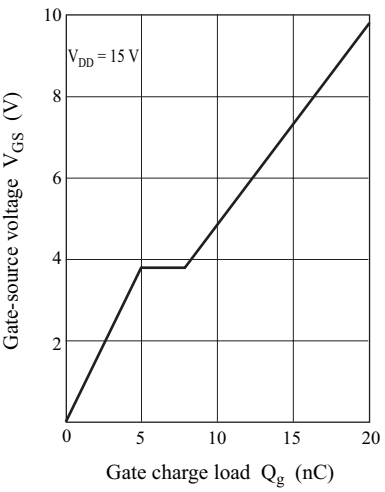
C_{iss} , C_{rss} , C_{oss} — V_{DS}



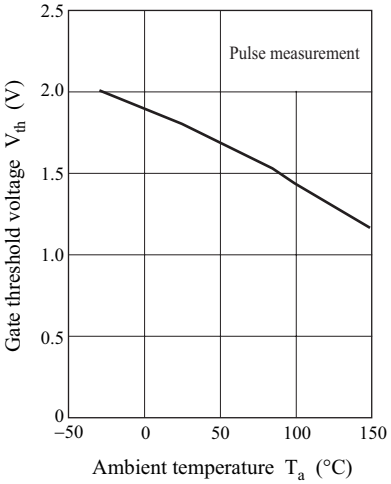
V_{DS} — V_{GS}



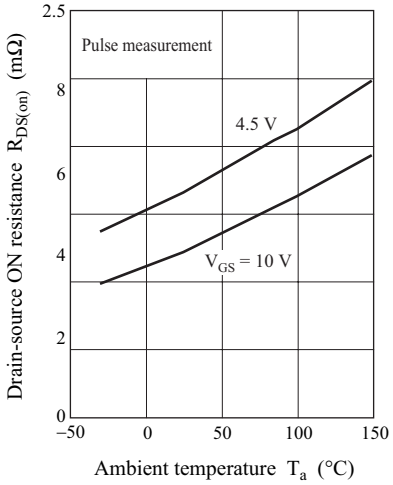
V_{GS} — Q_g



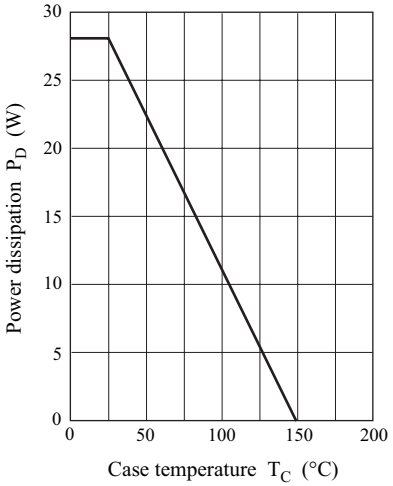
V_{th} — T_a



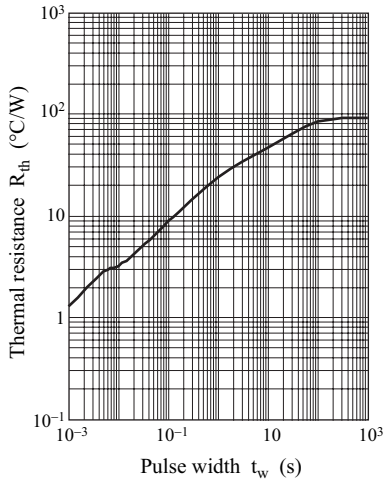
$R_{DS(on)}$ — T_a



P_D — T_C



R_{th} — t_w



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