

HAT1043M

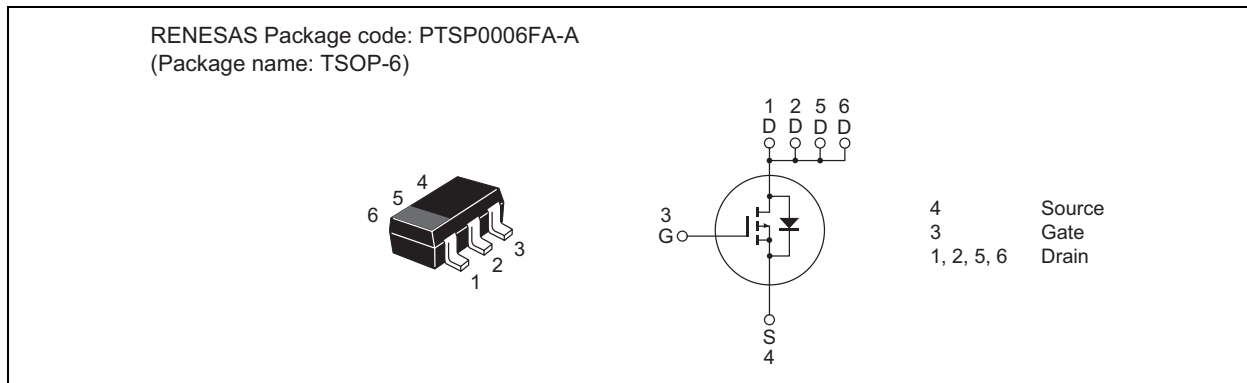
Silicon P Channel Power MOS FET
Power Switching

REJ03G1151-0600
(Previous: ADE-208-754D)
Rev.6.00
Sep 07, 2005

Features

- Low on-resistance
- Low drive current
- High density mounting
- 2.5 V gate drive device can be driven from 3 V source

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	-20	V
Gate to source voltage	V _{GSS}	±12	V
Drain current	I _D	-4.4	A
Drain peak current	I _{D (pulse)} ^{Note 1}	-17.6	A
Body-drain diode reverse drain current	I _{DR} ^{Note 2}	-4.4	A
Channel dissipation	P _{ch (pulse)} ^{Note 2}	2.0	W
Channel dissipation	P _{ch (continuous)} ^{Note 3}	1.05	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. When using the alumina ceramic board (50 × 50 × 0.7 mm), PW ≤ 5 s, Ta = 25°C

3. When using the alumina ceramic board (50 × 50 × 0.7 mm), Ta = 25°C

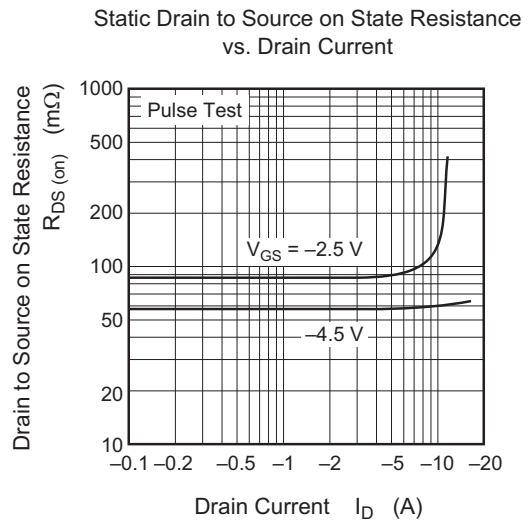
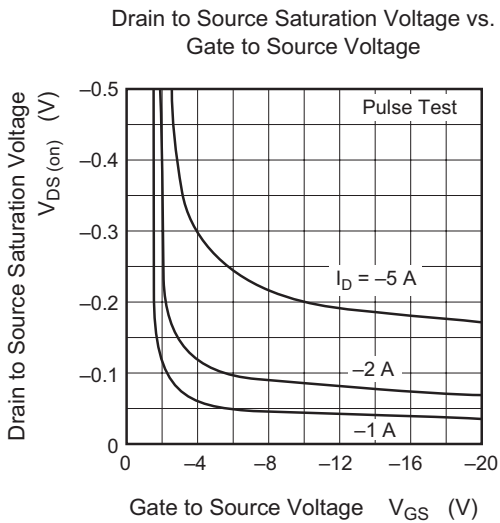
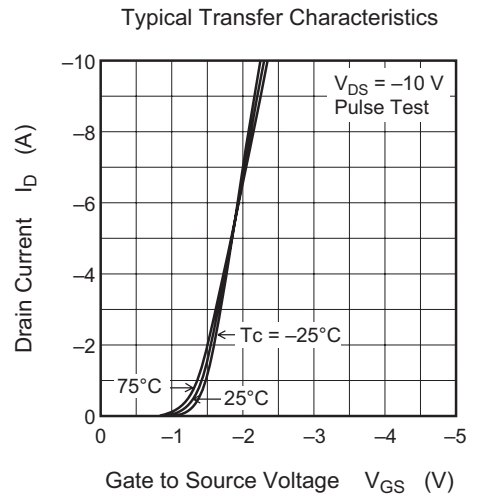
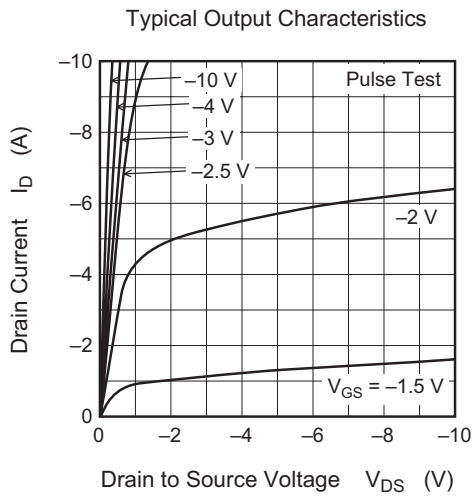
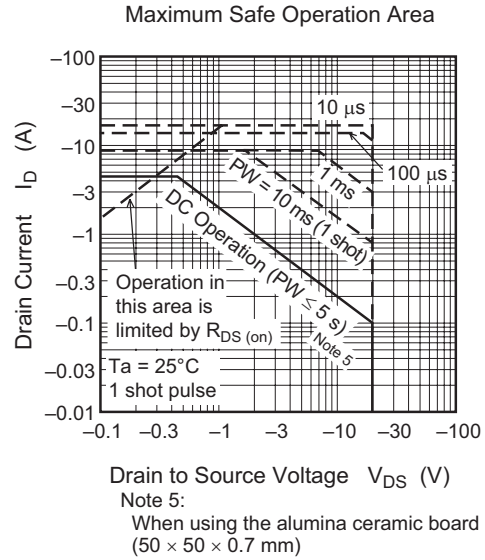
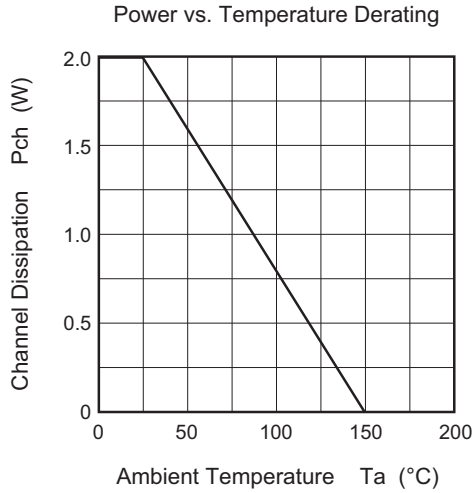
Electrical Characteristics

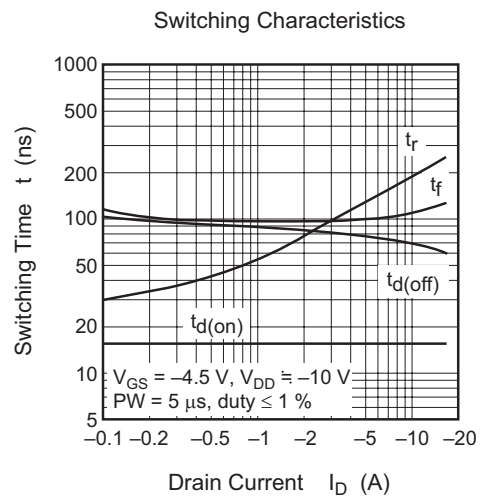
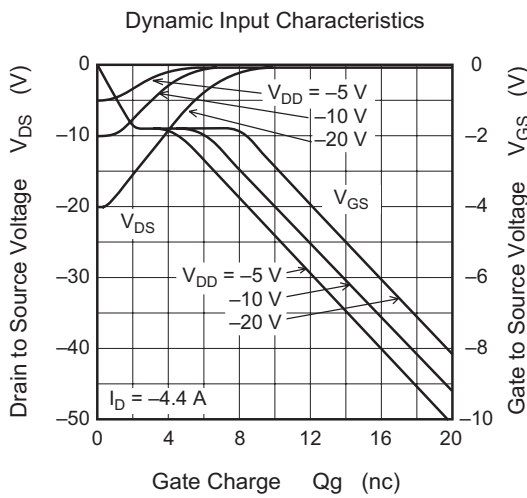
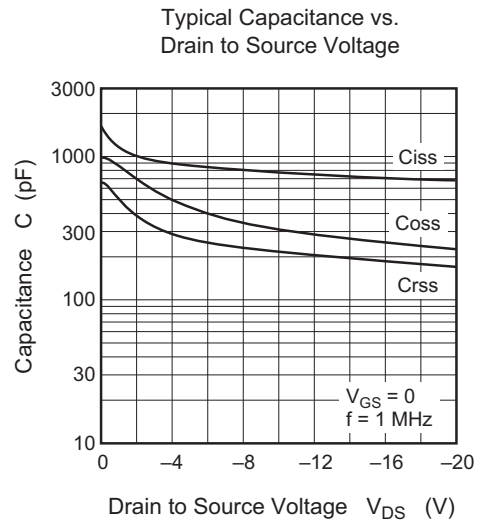
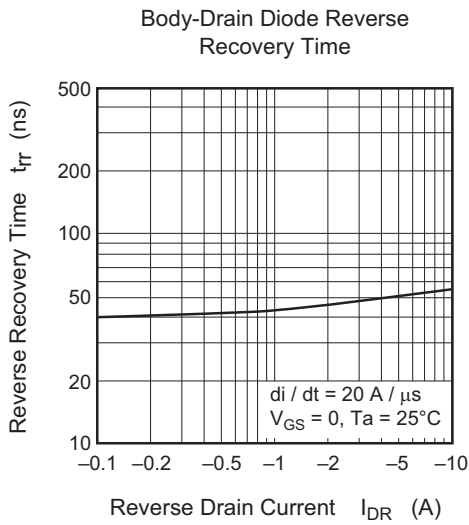
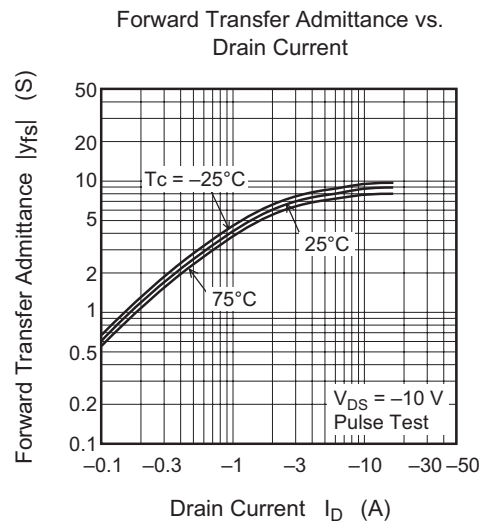
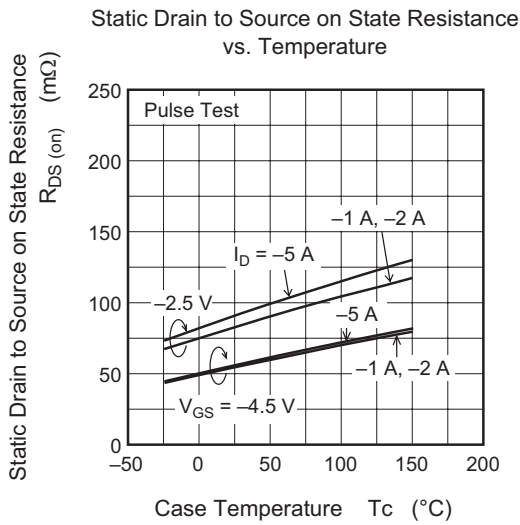
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	-20	—	—	V	I _D = -10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±12 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	-1	μA	V _{DS} = -20 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	-0.4	—	-1.4	V	I _D = -1 mA, V _{DS} = -10 V
Static drain to source on state resistance	R _{DS (on)}	—	55	65	mΩ	I _D = -3 A, V _{GS} = -4.5 V ^{Note 4}
	R _{DS (on)}	—	85	110	mΩ	I _D = -3 A, V _{GS} = -2.5 V ^{Note 4}
Forward transfer admittance	y _{fs}	4	7	—	S	I _D = -3 A, V _{DS} = -10 V ^{Note 4}
Input capacitance	C _{iss}	—	750	—	pF	V _{DS} = -10 V
Output capacitance	C _{oss}	—	310	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	220	—	pF	f = 1 MHz
Total gate charge	Q _g	—	11	—	nC	V _{DD} = -10 V
Gate to source charge	Q _{gs}	—	2	—	nC	V _{GS} = -4.5 V
Gate to drain charge	Q _{gd}	—	3.5	—	nC	I _D = -4.4 A
Turn-on delay time	t _{d (on)}	—	15	—	ns	V _{GS} = -4.5 V, I _D = -3 A,
Rise time	t _r	—	100	—	ns	R _L = 3.3 Ω
Turn-off delay time	t _{d (off)}	—	85	—	ns	
Fall time	t _f	—	100	—	ns	
Body-drain diode forward voltage	V _{DF}	—	-0.95	-1.23	V	I _F = -4.4 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	50	—	ns	I _F = -4.4 A, V _{GS} = 0 di _F /dt = -20 A/μs

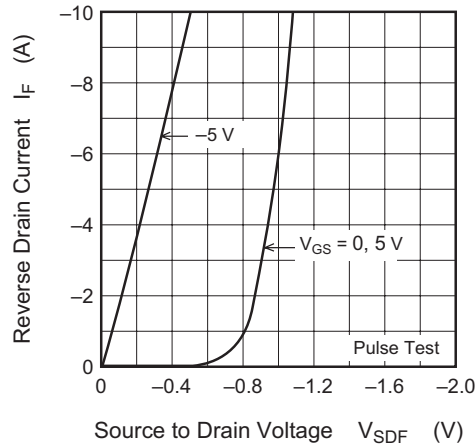
Note: 4. Pulse test

Main Characteristics

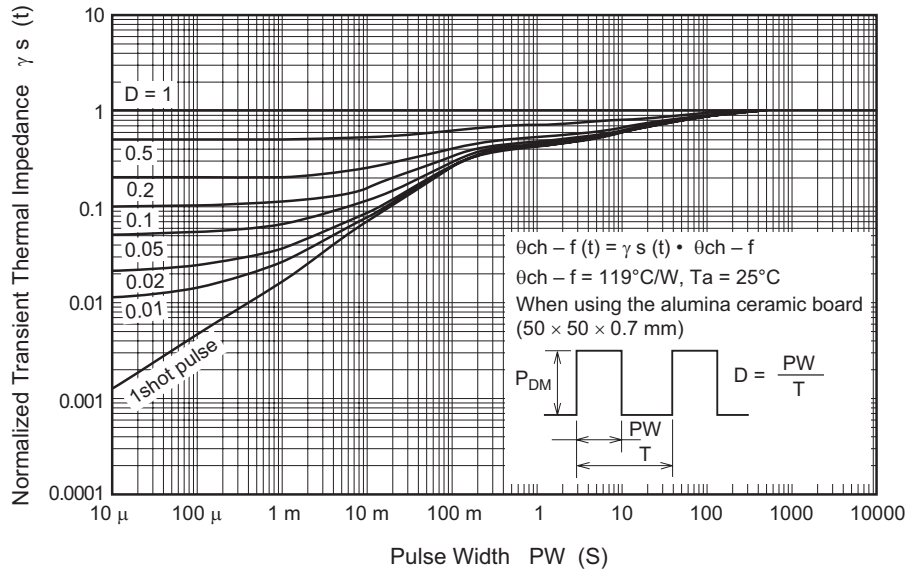




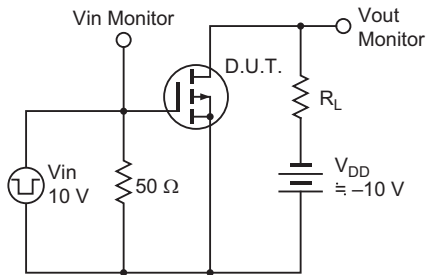
Reverse Drain Current vs. Source to Drain Voltage



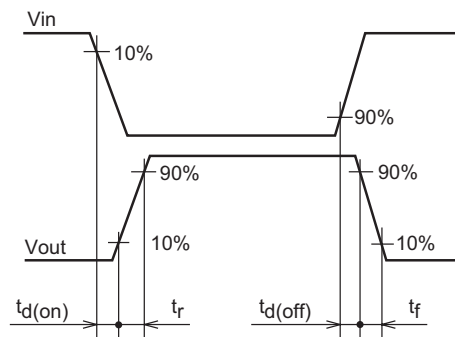
Normalized Transient Thermal Impedance vs. Pulse Width



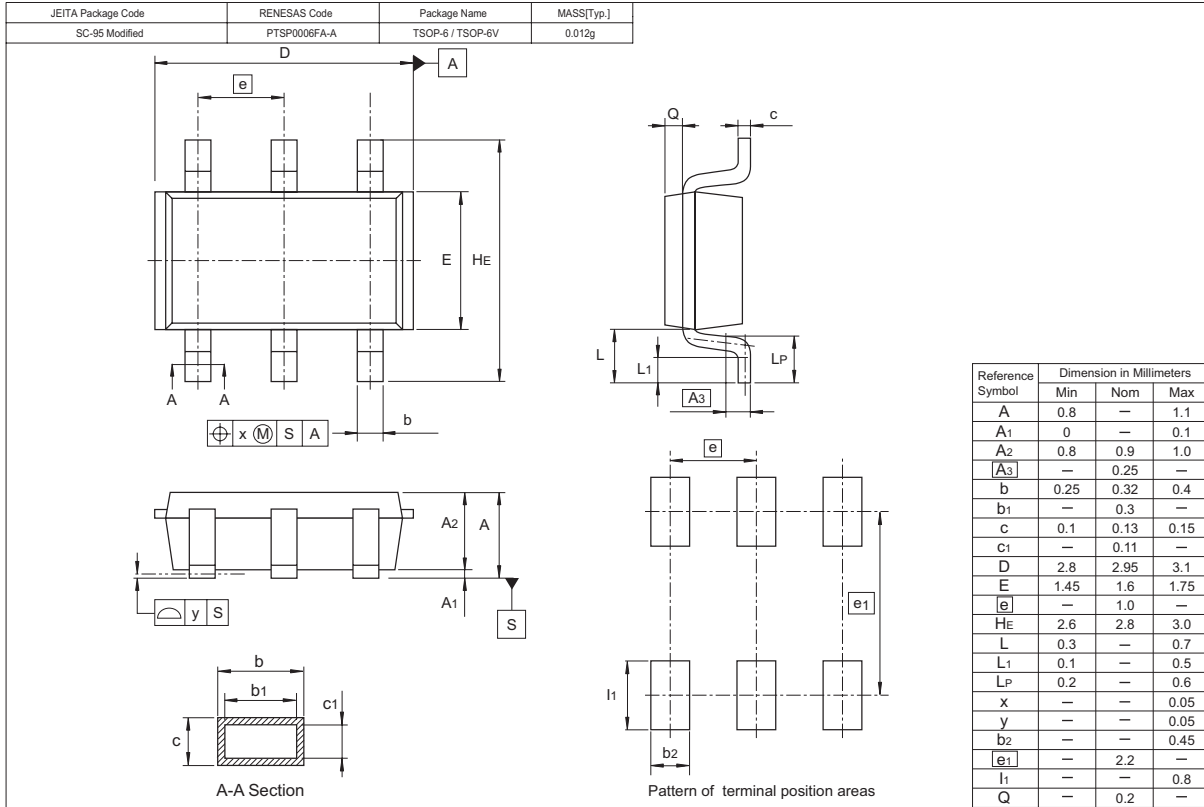
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT1043M-EL-E	3000 pcs	Taping

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