

FW297



ON Semiconductor®

www.onsemi.com

Power MOSFET 60V, 58mΩ, 4.5A, Dual N-Channel

Features

- Low On-Resistance
- 4.0V Drive
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS Compliance

Specifications

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

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DS}	60	V
Gate to Source Voltage	V_{GS}	± 20	V
Drain Current (DC)	I_D	4.5	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	I_{DP}	18	A
Power Dissipation When mounted on ceramic substrate ($2000\text{mm}^2 \times 0.8\text{mm}$) 1 unit, $PW \leq 10\text{s}$	P_D	1.8	W
Total Dissipation When mounted on ceramic substrate ($2000\text{mm}^2 \times 0.8\text{mm}$) , $PW \leq 10\text{s}$	P_T	2.2	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to $+150$	$^\circ\text{C}$

Thermal Resistance Ratings

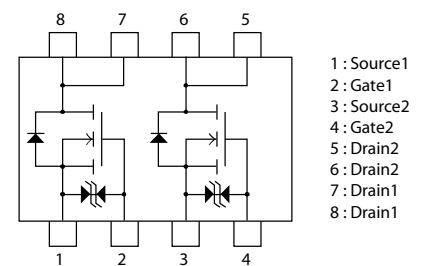
Parameter	Symbol	Value	Unit
Junction to Ambient 1 unit, $PW \leq 10\text{s}$ * ¹	$R_{\theta JA}$	69.4	$^\circ\text{C/W}$
Junction to Ambient 2 units, $PW \leq 10\text{s}$ * ¹	$R_{\theta JA}$	56.8	

Note: *¹ When mounted on ceramic substrate ($2000\text{mm}^2 \times 0.8\text{mm}$)

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

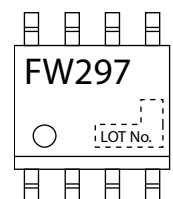
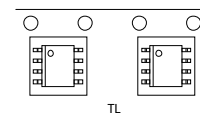
V_{DS}	$R_{DS(on)}$ Max	I_D Max
60V	58mΩ@ 10V	4.5A
	84mΩ@ 4.5V	
	95mΩ@ 4.0V	

Electrical Connection N-Channel



Packing Type : TL

Marking



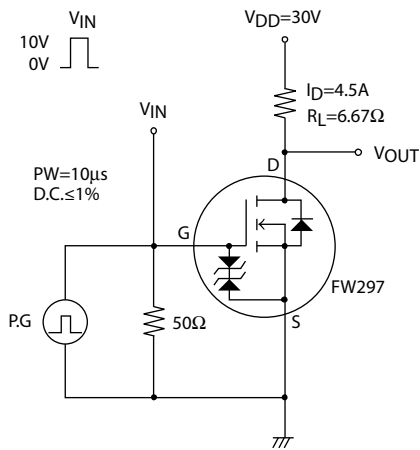
ORDERING INFORMATION

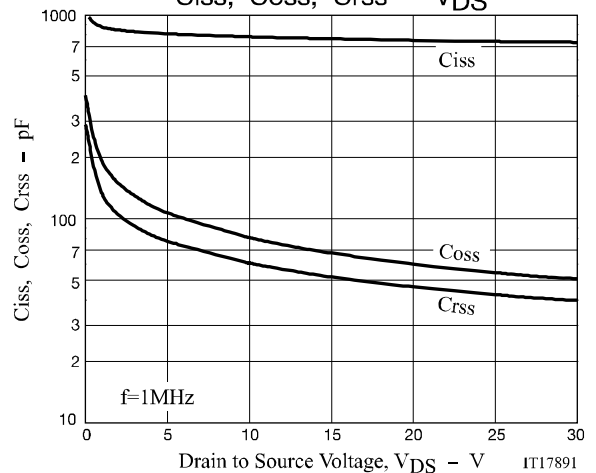
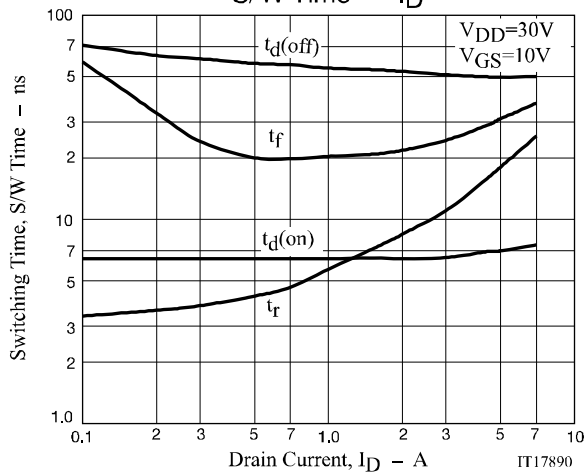
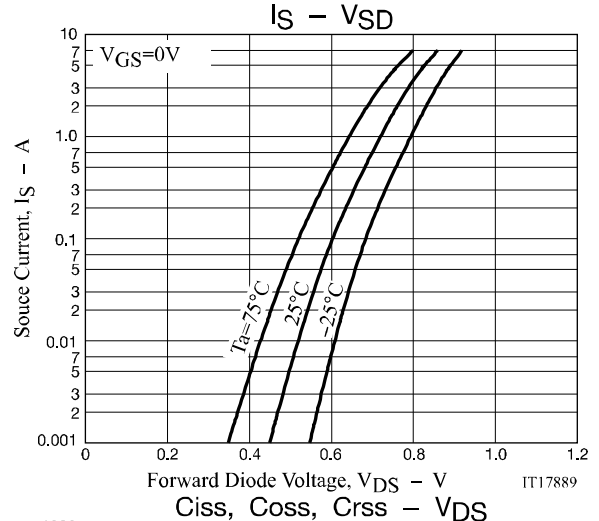
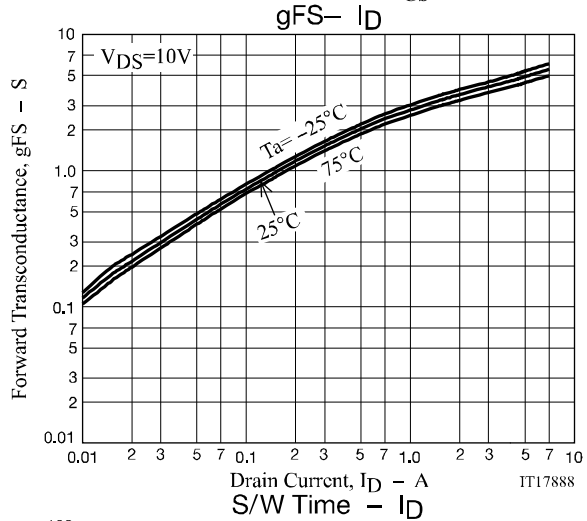
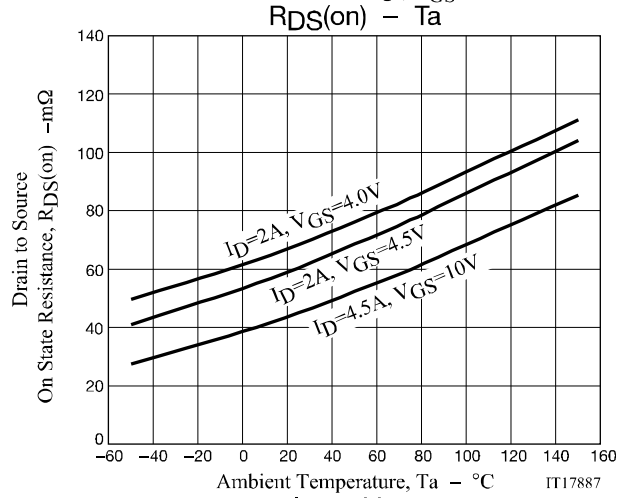
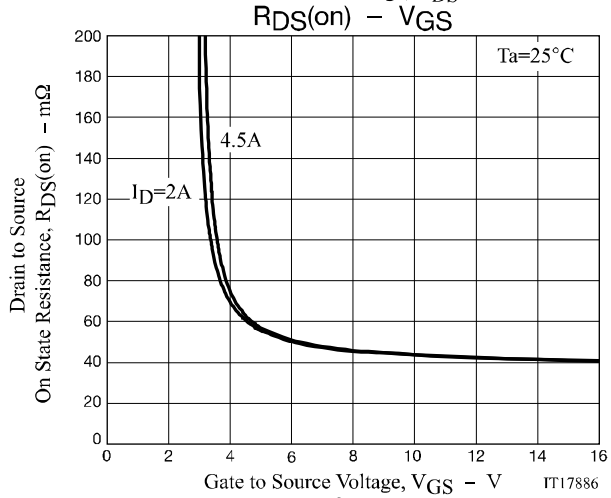
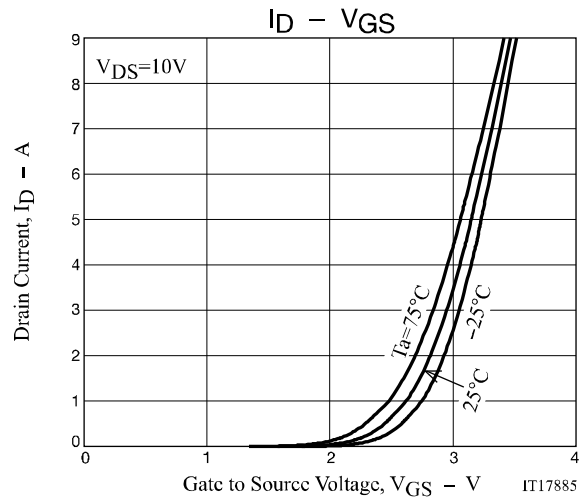
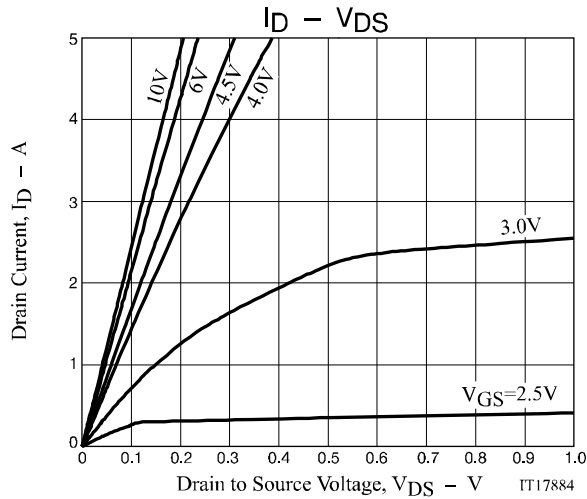
See detailed ordering and shipping information on page 5 of this data sheet.

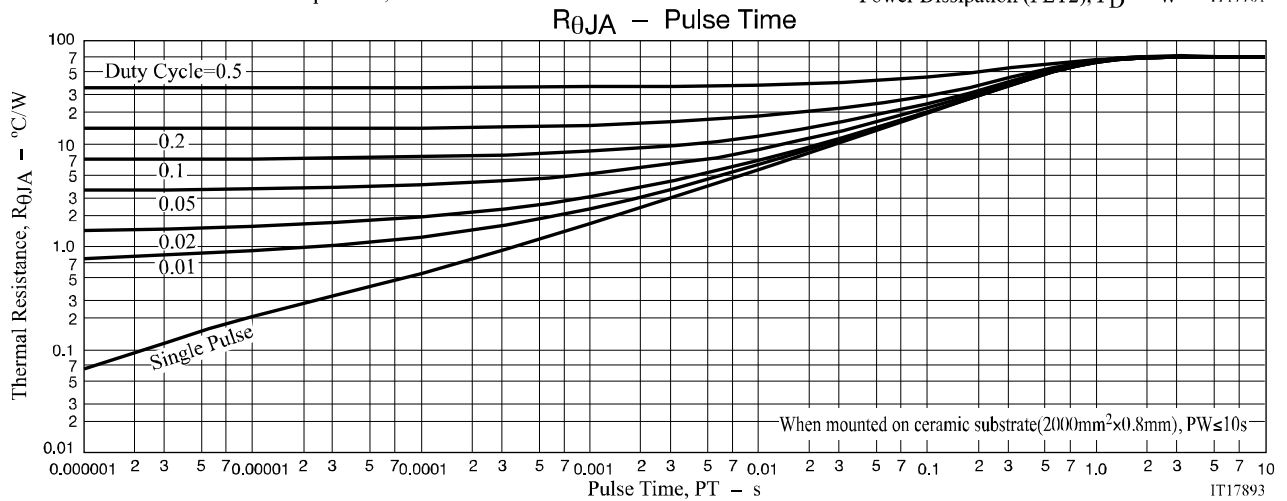
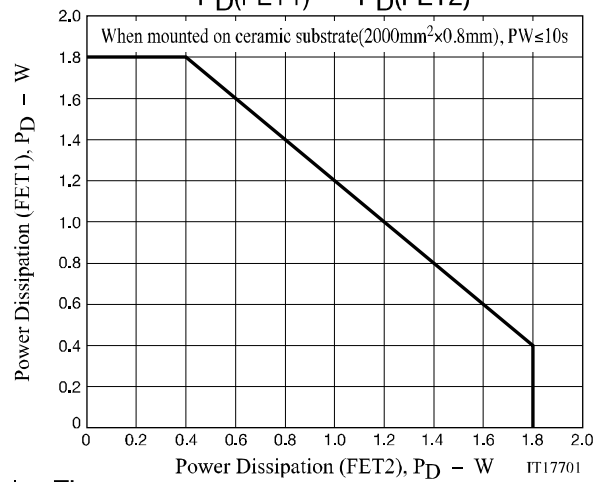
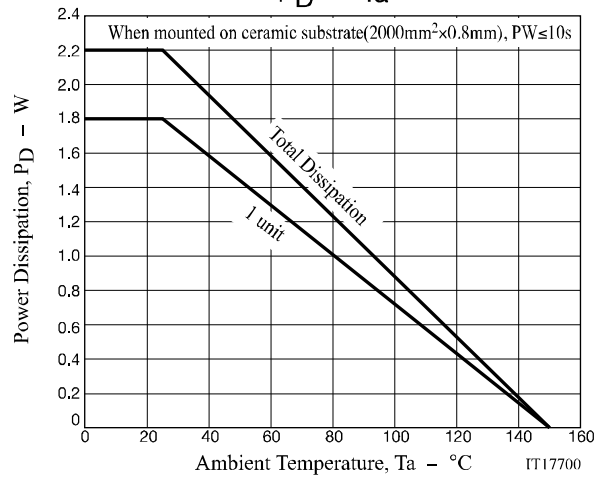
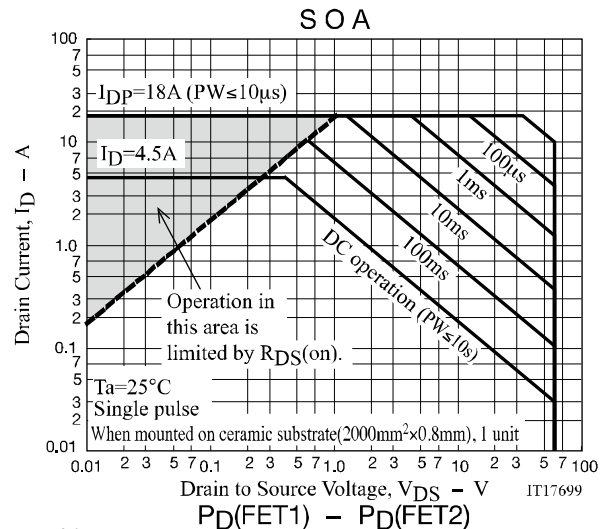
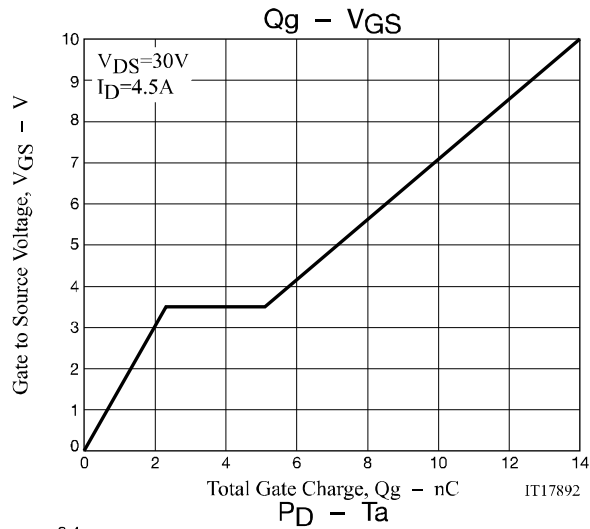
Electrical Characteristics at $T_a = 25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	1.2		2.6	V
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=4.5\text{A}$		4.7		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=4.5\text{A}$, $V_{GS}=10\text{V}$		45	58	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=2\text{A}$, $V_{GS}=4.5\text{V}$		60	84	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=2\text{A}$, $V_{GS}=4.0\text{V}$		68	95	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		750		pF
Output Capacitance	C_{oss}			59		pF
Reverse Transfer Capacitance	C_{rss}			47		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		7		ns
Rise Time	t_r			16		ns
Turn-OFF Delay Time	$t_{d(off)}$			50		ns
Fall Time	t_f			30		ns
Total Gate Charge	Q_g	$V_{DS}=30\text{V}$, $V_{GS}=10\text{V}$, $I_D=4.5\text{A}$		14		nC
Gate to Source Charge	Q_{gs}			2.3		nC
Gate to Drain "Miller" Charge	Q_{gd}			2.8		nC
Forward Diode Voltage	V_{SD}	$I_S=4.5\text{A}$, $V_{GS}=0\text{V}$		0.81	1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit





Package Dimensions

FW297-TL-2W

SOIC-8

CASE 751CR

ISSUE O

Unit : mm

1: Source1

2: Gate1

3: Source2

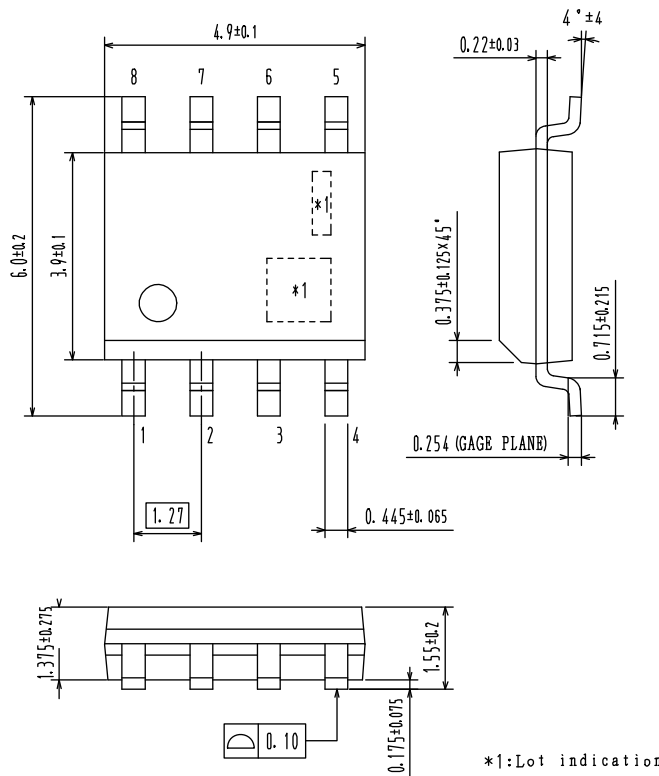
4: Gate2

5: Drain2

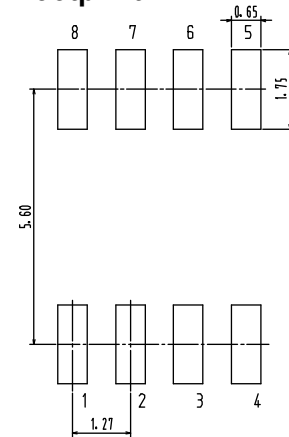
6: Drain2

7: Drain1

8: Drain1



Recommended Soldering Footprint



ORDERING INFORMATION

Device	Package	Shipping	Note
FW297-TL-2W	SOIC8 SC-87, SOT-96	2,500 pcs. / Tape & Reel	Pb-Free and Halogen Free

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

Note on usage : Since the FW297 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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