Ordering number : ENA0176C

FW216A

N-Channel Power MOSFET
35V, 4.5A, 64mΩ, Dual SOIC8

ON Semiconductor®
http://onsemi.com

Features

- ON-resistance Nch : $R_{DS}(on)1$=49mΩ (typ.)
- 4.0V drive
- Halogen free compliance
- Protection diode in

Specifications

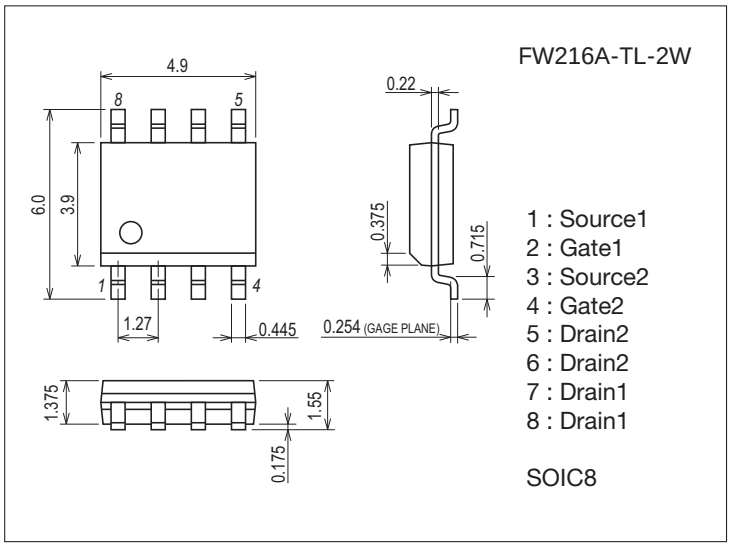
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	V_{DSS}		35	V
Gate to Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		4.5	A
Drain Current (PW≤10μs)	I_{DP}	Duty cycle≤1%	18	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (2000mm²×0.8mm) 1unit, PW≤10s	1.6	W
Total Dissipation	P_T	When mounted on ceramic substrate (2000mm²×0.8mm), PW≤10s	2.2	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

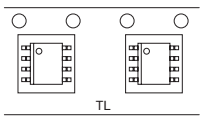
unit : mm (typ)
7072-001



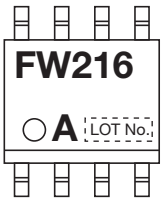
Product & Package Information

- Package : SOIC8
- JEITA, JEDEC : SC-87, SOT-96
- Minimum Packing Quantity : 2,500 pcs./reel

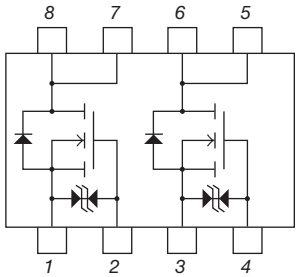
Packing Type : TL



Marking



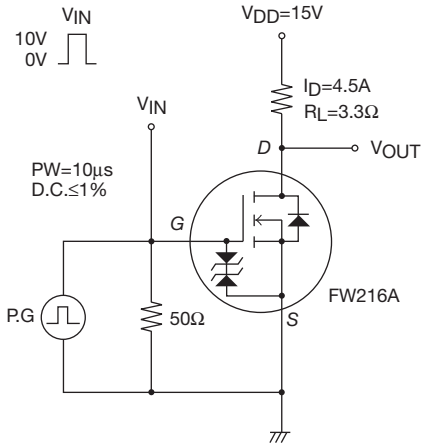
Electrical Connection



Electrical Characteristics at Ta=25°C

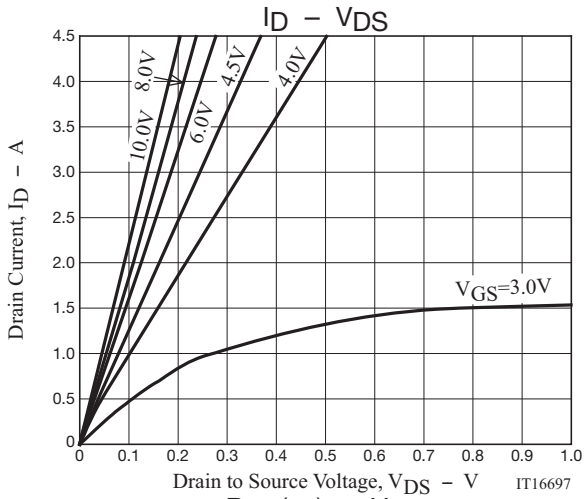
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	35			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=35V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	1.5		2.5	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=4.5A		2.6		S
Static Drain to Source On-State Resistance	R_{DS}(on)1	I_D=4.5A, V_{GS}=10V		49	64	mΩ
	R_{DS}(on)2	I_D=2A, V_{GS}=4.5V		80	112	mΩ
	R_{DS}(on)3	I_D=2A, V_{GS}=4.0V		100	140	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		280		pF
Output Capacitance	Coss			60		pF
Reverse Transfer Capacitance	Crss			30		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		6		ns
Rise Time	t_r			21		ns
Turn-OFF Delay Time	t_d(off)			20		ns
Fall Time	t_f			10		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=4.5A		5.6		nC
Gate to Source Charge	Qgs			1.2		nC
Gate to Drain “Miller” Charge	Qgd			0.8		nC
Diode Forward Voltage	V_{SD}	I_S=4.5A, V_{GS}=0V		0.85	1.2	V

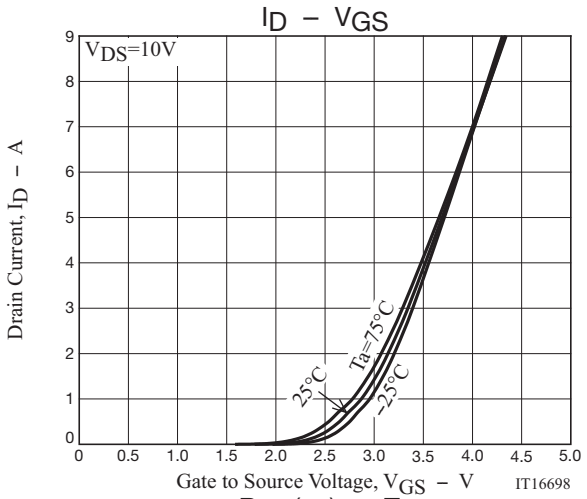
Switching Time Test Circuit

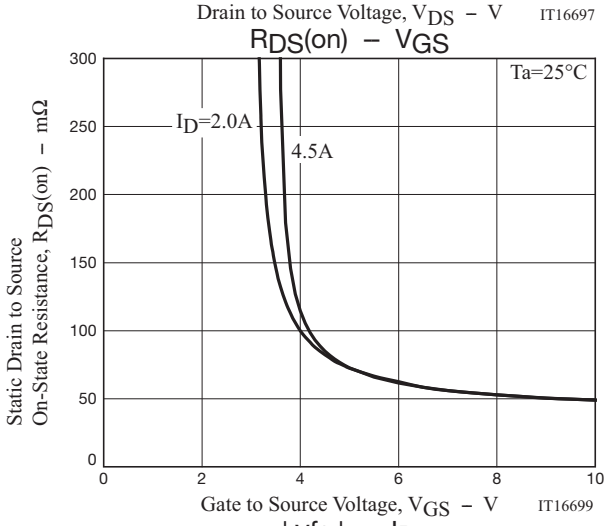


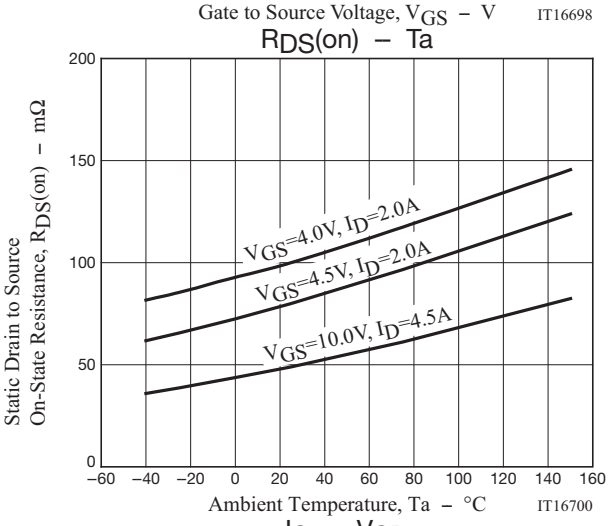
Ordering Information

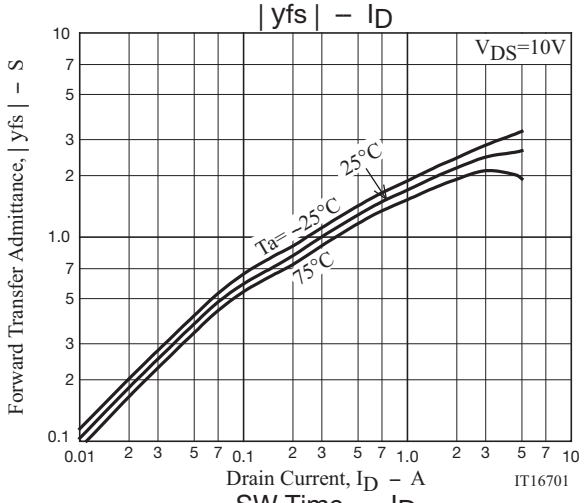
Device	Package	Shipping	memo
FW216A-TL-2W	SOIC8	2,500pcs./reel	Pb Free and Halogen Free

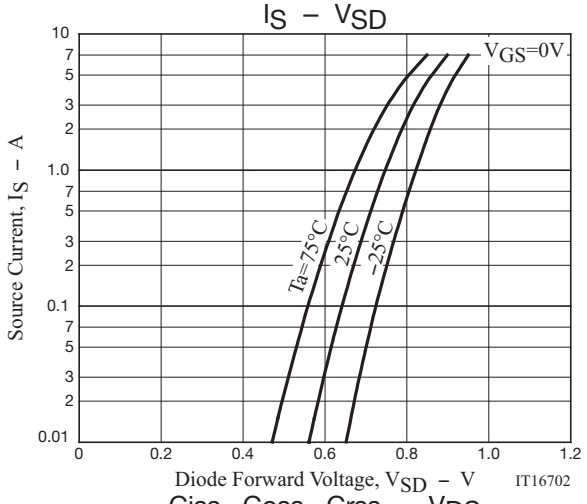

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16697
8.0V
10.0V
6.0V
4.5V
4.0V
VGS=3.0V

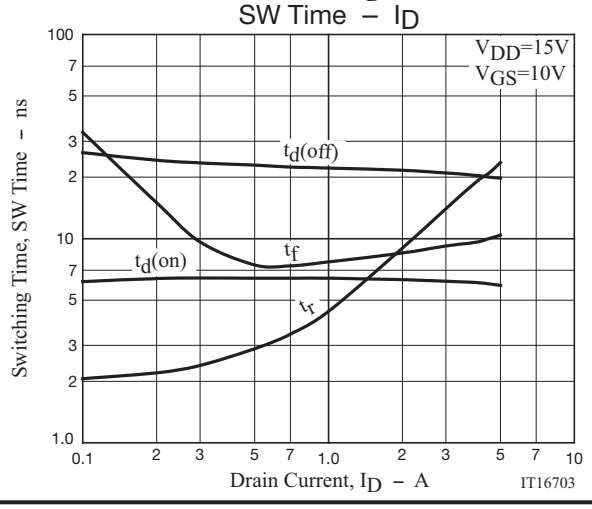

ID – VGS
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT16698
VDS=10V
25°C
Ta=75°C
–25°C

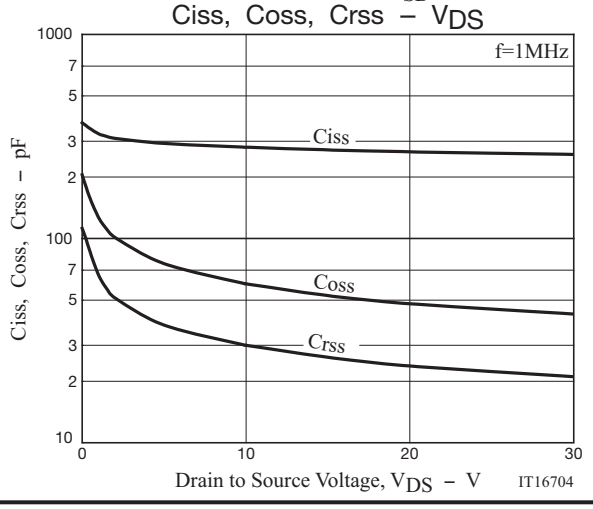

RDS(on) – VGS
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT16699
Ta=25°C
ID=2.0A
4.5A

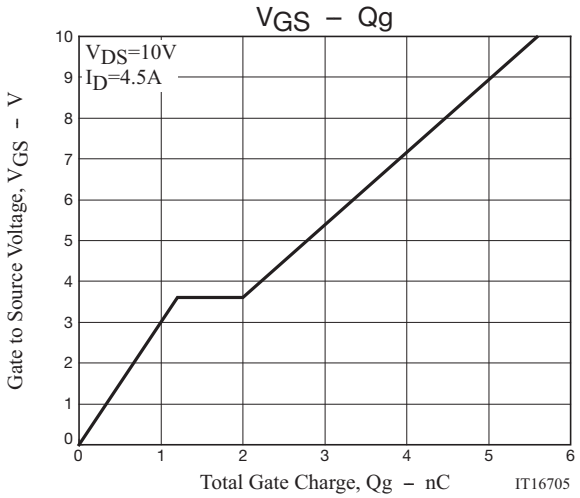

RDS(on) – Ta
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT16700
VGS=4.0V, ID=2.0A
VGS=4.5V, ID=2.0A
VGS=10.0V, ID=4.5A

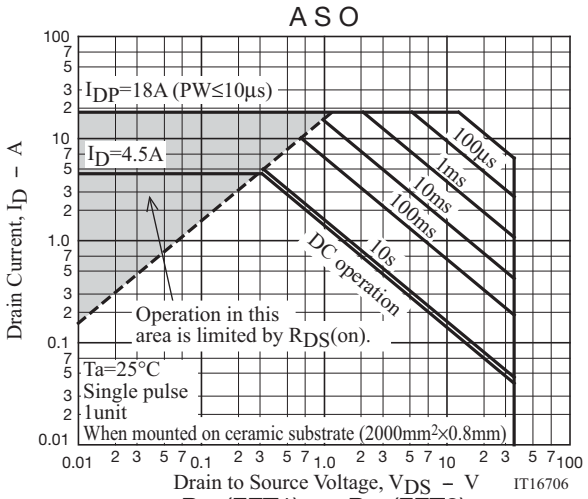

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT16701
VDS=10V
25°C
Ta= –25°C
75°C

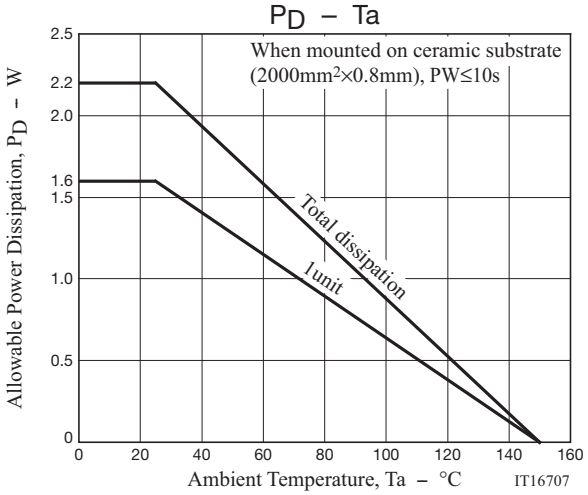

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT16702
VGS=0V
Ta=75°C
25°C
–25°C

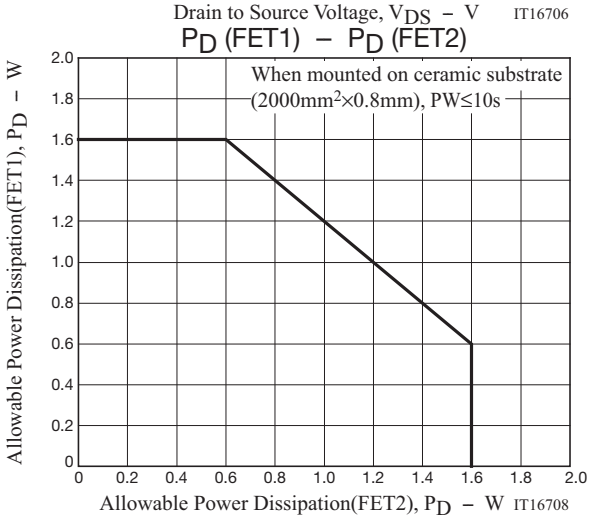

SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT16703
VDD=15V
VGS=10V
td(off)
tf
td(on)
tr


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT16704
f=1MHz
Ciss
Coss
Crss


VGS – Qg
VDS=10V
ID=4.5A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT16705

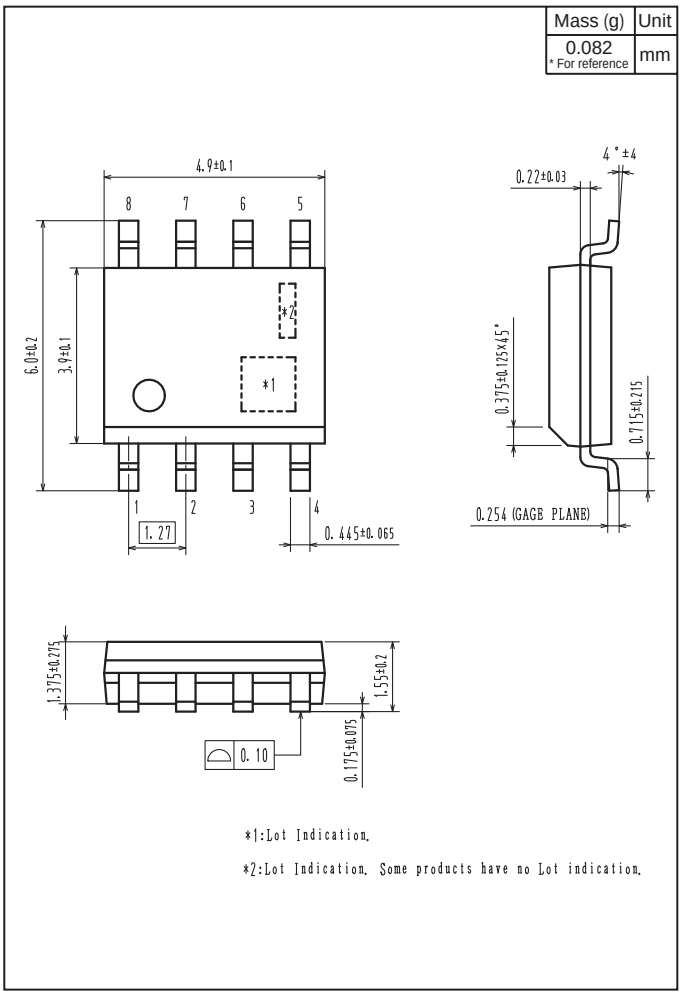

A S O
IDP=18A (PW≤10μs)
ID=4.5A
100μs
1ms
10ms
100ms
10s
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
1unit
When mounted on ceramic substrate (2000mm2×0.8mm)
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16706


PD – Ta
When mounted on ceramic substrate
(2000mm2×0.8mm), PW≤10s
Total dissipation
1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT16707

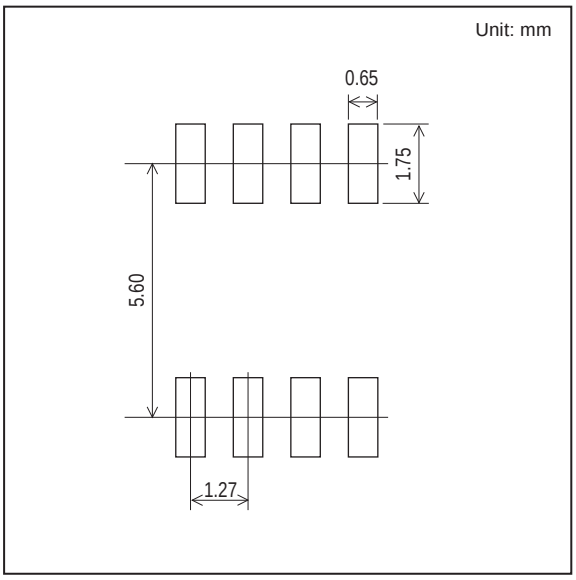

PD (FET1) – PD (FET2)
When mounted on ceramic substrate
(2000mm2×0.8mm), PW≤10s
Allowable Power Dissipation(FET1), PD – W
Allowable Power Dissipation(FET2), PD – W
IT16708

Outline Drawing

FW216A-TL-2W



Land Pattern Example



Note on usage : Since the FW216A is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.