



# FW4604

## Power MOSFET

30V, 6A, 39mΩ, -30V, -4.5A, 65mΩ, Complementary Dual SOIC8

ON Semiconductor®

<http://onsemi.com>

### Features

- On-state resistance Nch :  $R_{DS(on)1}=30m\Omega$ (typ.)  
Pch :  $R_{DS(on)1}=50m\Omega$ (typ.)
- 4.5V drive
- Halogen free compliance
- Nch + Pch MOSFET
- Protection diode in

### Specifications

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

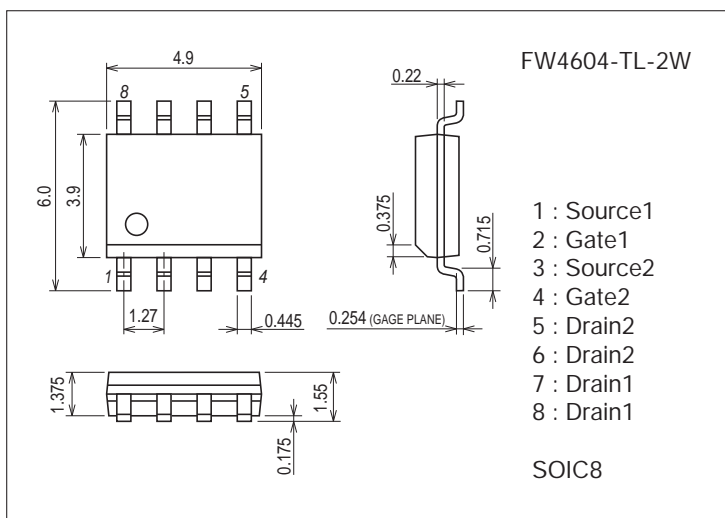
Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain to Source Voltage	$V_{DSS}$		30	-30	V
Gate to Source Voltage	$V_{GSS}$		$\pm 20$	$\pm 20$	V
Drain Current (DC)	$I_D$		6	-4.5	A
Drain Current ( $PW \leq 10s$ )	$I_{DP}$	Duty cycle $\leq 1\%$	6.5	-5	A
Drain Current ( $PW \leq 10\mu s$ )	$I_{DP}$	Duty cycle $\leq 1\%$	24	-18	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (2000mm <sup>2</sup> ×0.8mm) 1unit, $PW \leq 10s$	1.8		W
Total Dissipation	$P_T$	When mounted on ceramic substrate (2000mm <sup>2</sup> ×0.8mm), $PW \leq 10s$	2.2		W
Channel Temperature	$T_{ch}$		150		°C
Storage Temperature	$T_{stg}$		-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)

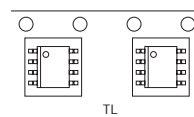
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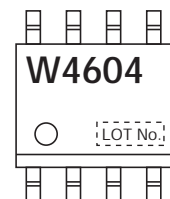
### Product & Package Information

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

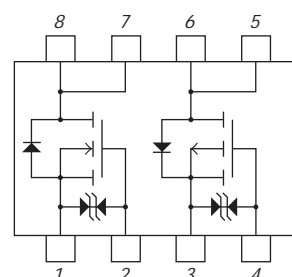
### Packing Type : TL



### Marking



### Electrical Connection



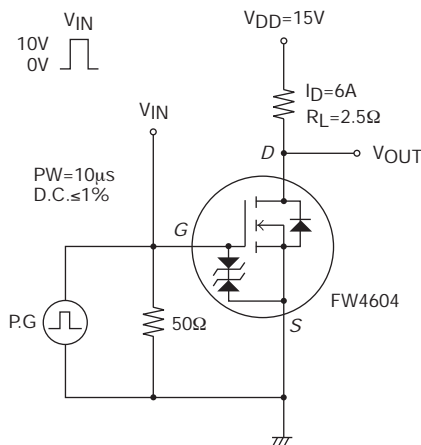
# FW4604

## Electrical Characteristics at Ta=25°C

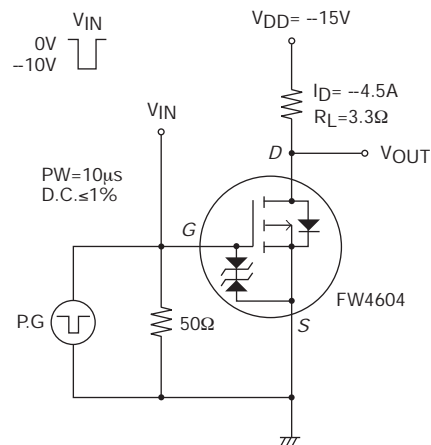
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.7		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=6A$		3		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=6A, V_{GS}=10V$		30	39	$m\Omega$
	$R_{DS(on)2}$	$I_D=3A, V_{GS}=4.5V$		50	70	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		490		pF
Output Capacitance	$C_{oss}$			85		pF
Reverse Transfer Capacitance	$C_{rss}$			45		pF
Turn-ON Delay Time	$t_d(on)$		See specified Test Circuit.		8	
Rise Time	$t_r$			45		ns
Turn-OFF Delay Time	$t_d(off)$			31		ns
Fall Time	$t_f$			28		ns
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=6A$			9.1	
Gate to Source Charge	$Q_{gs}$			1.7		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			1.7		nC
Diode Forward Voltage	$V_{SD}$	$I_S=6A, V_{GS}=0V$		0.84	1.2	V
[P-channel]						
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0V$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.7		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-4.5A$		5.2		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=-4.5A, V_{GS}=-10V$		50	65	$m\Omega$
	$R_{DS(on)2}$	$I_D=-2.5A, V_{GS}=-4.5V$		85	119	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		430		pF
Output Capacitance	$C_{oss}$			105		pF
Reverse Transfer Capacitance	$C_{rss}$			75		pF
Turn-ON Delay Time	$t_d(on)$		See specified Test Circuit.		7.5	
Rise Time	$t_r$			42		ns
Turn-OFF Delay Time	$t_d(off)$			43		ns
Fall Time	$t_f$			40		ns
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V, I_D=-4.5A$			10	
Gate to Source Charge	$Q_{gs}$			2.0		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			2.5		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-4.5A, V_{GS}=0V$		-0.86	-1.5	V

### Switching Time Test Circuit

[N-channel]

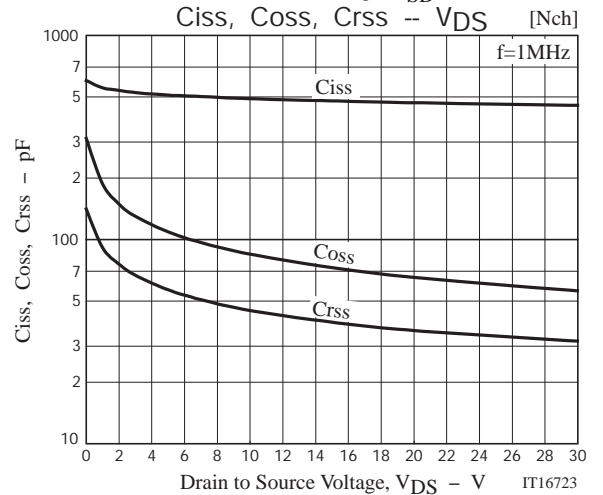
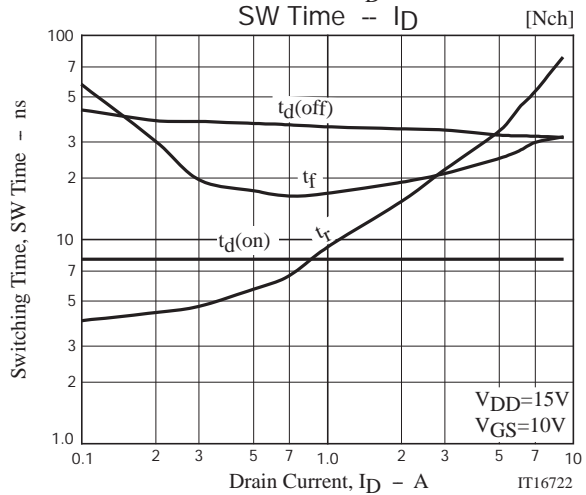
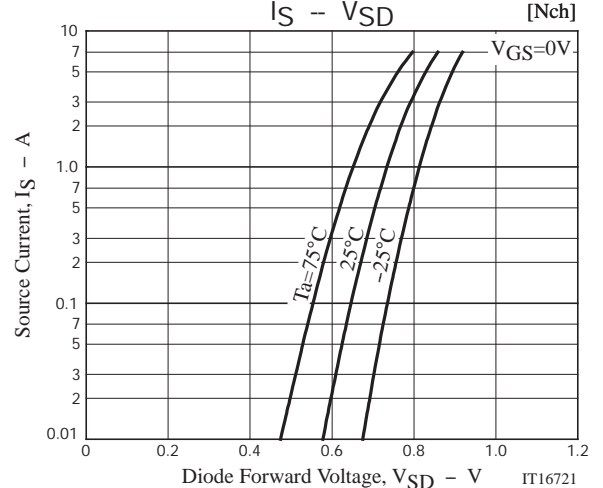
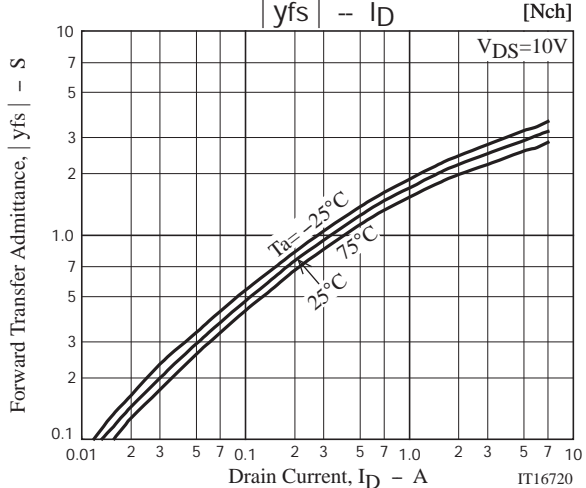
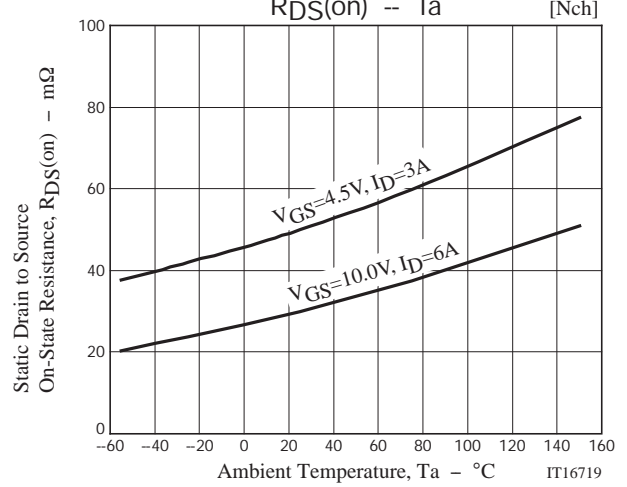
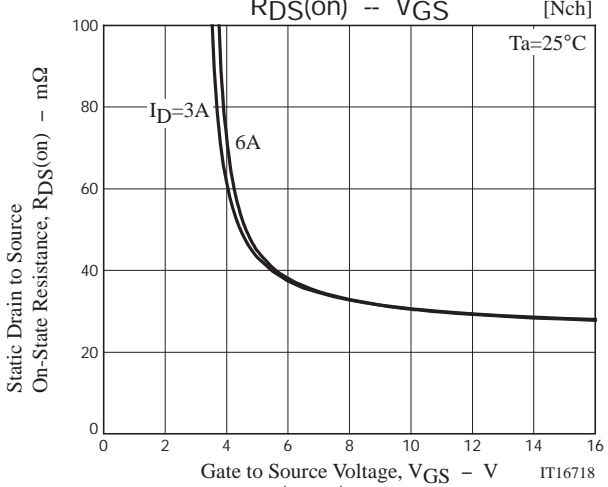
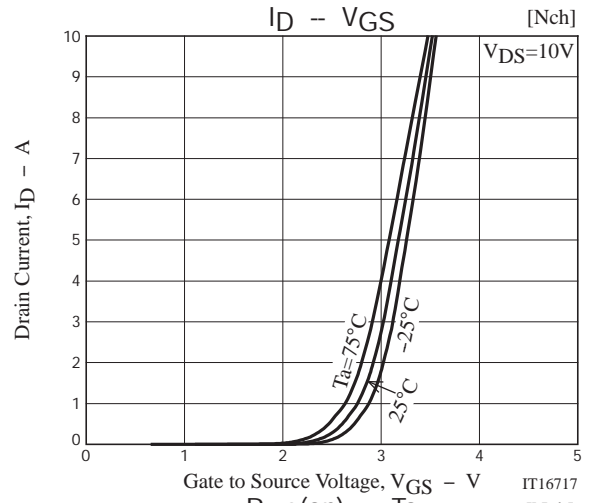
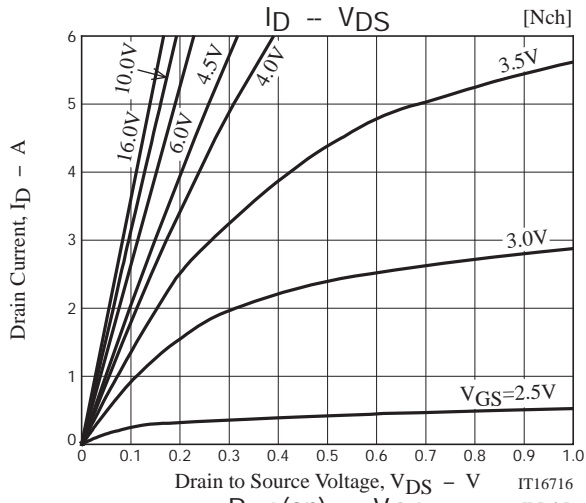


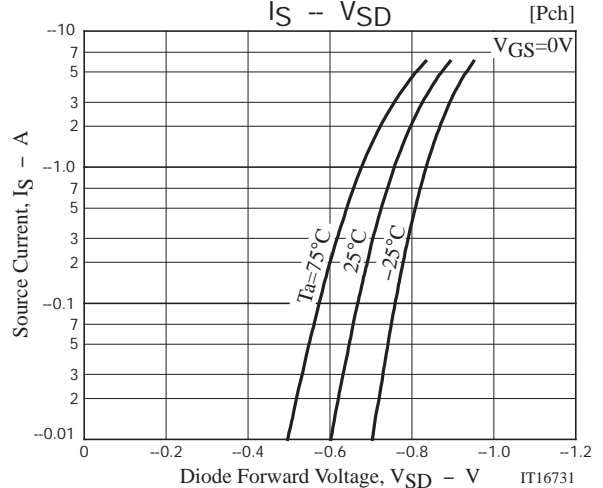
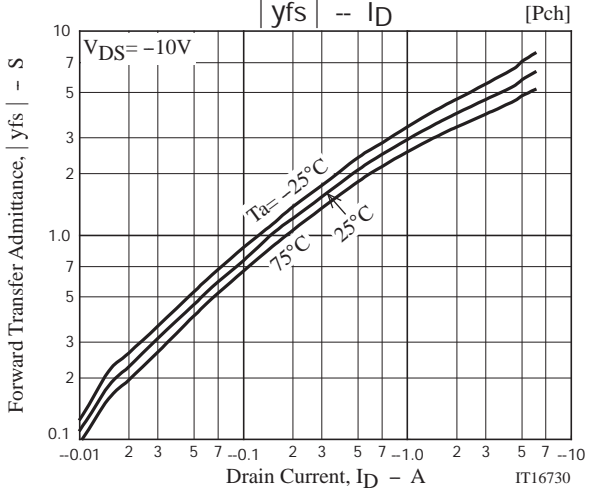
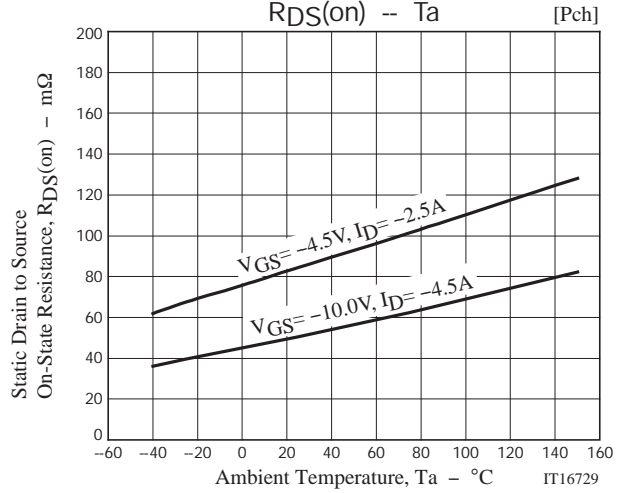
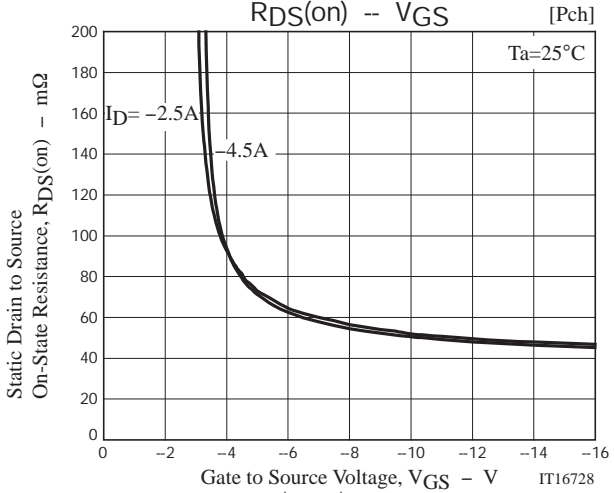
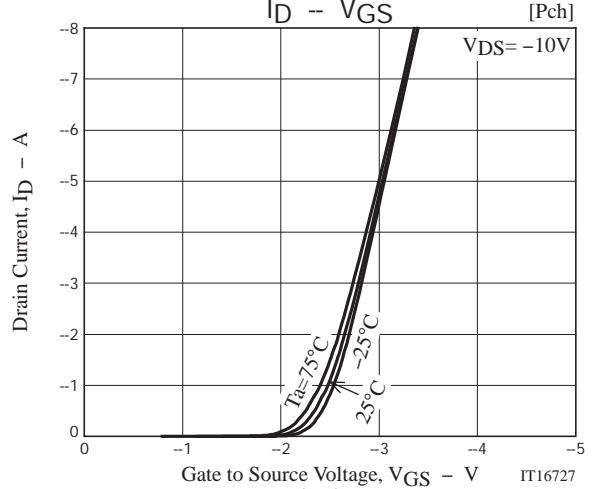
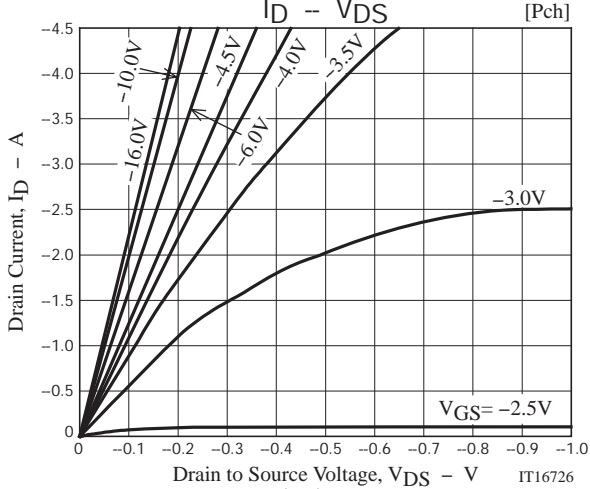
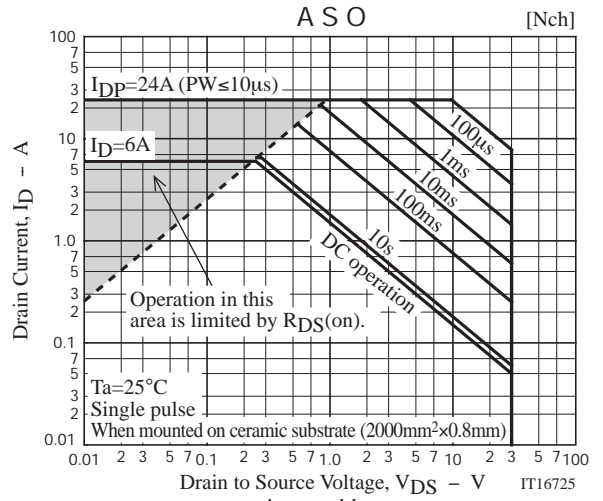
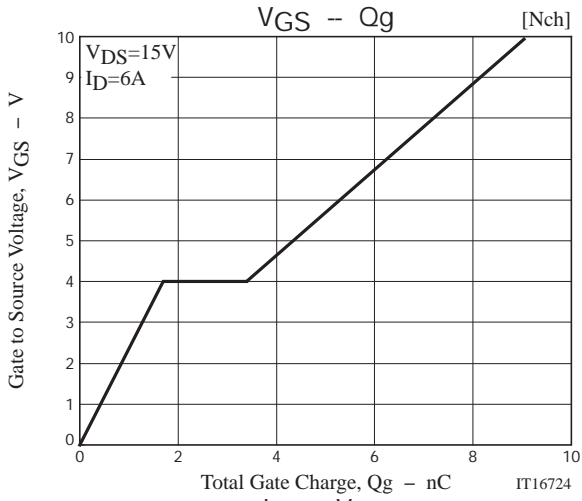
[P-channel]

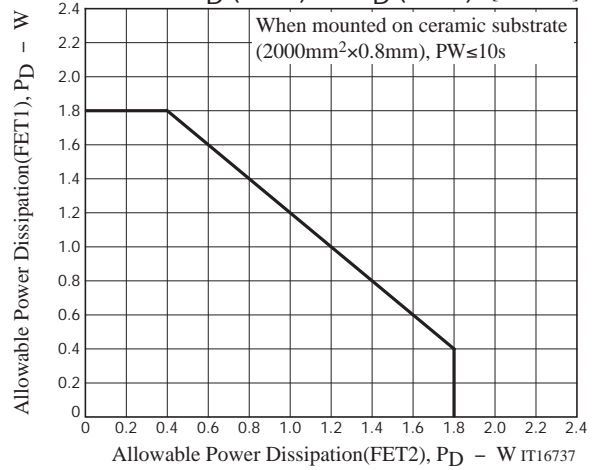
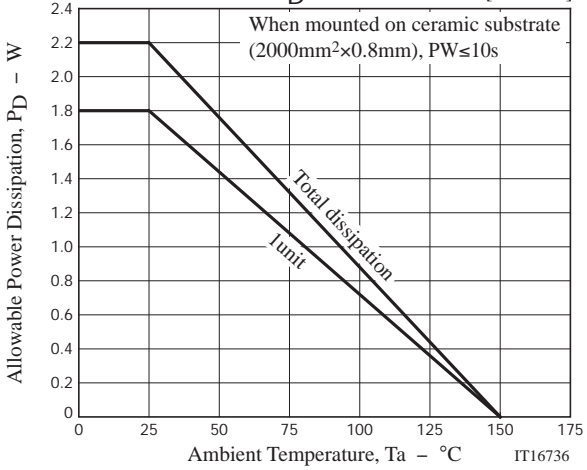
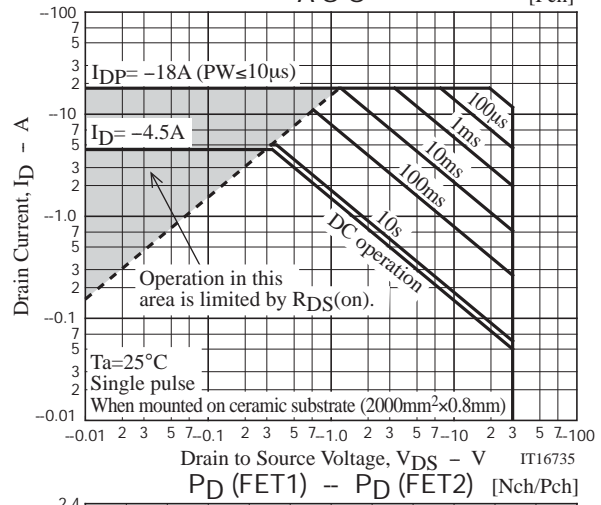
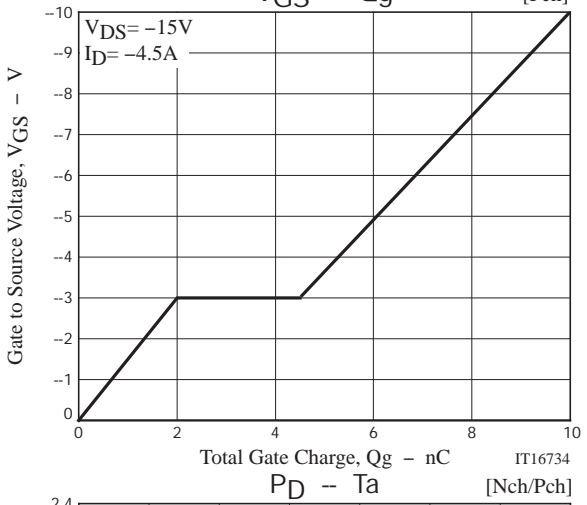
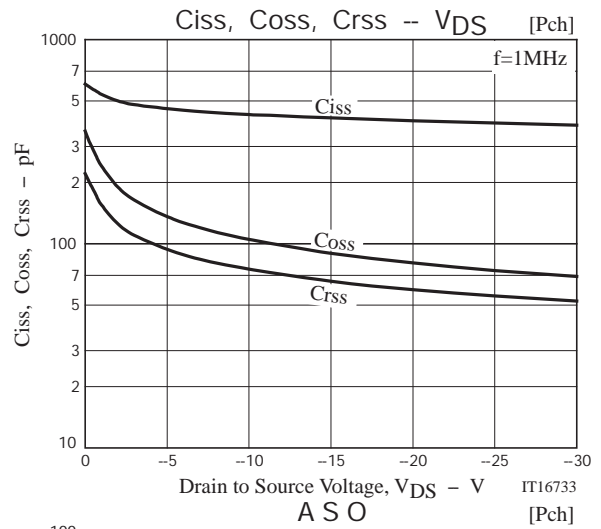
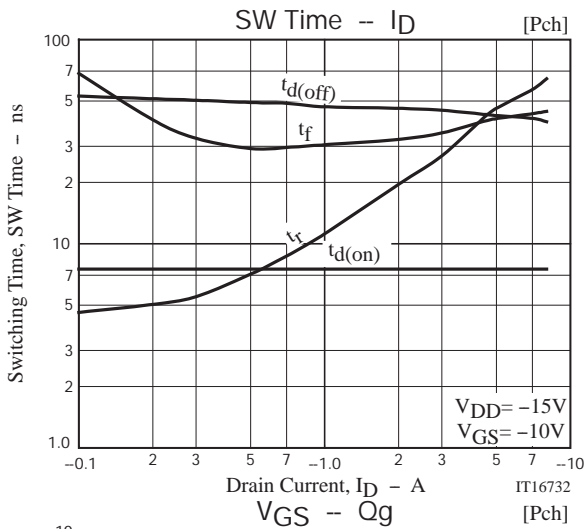


### Ordering Information

Device	Package	Shipping	memo
FW4604-TL-2W	SOIC8	2,500pcs./reel	Pb-Free and Halogen Free

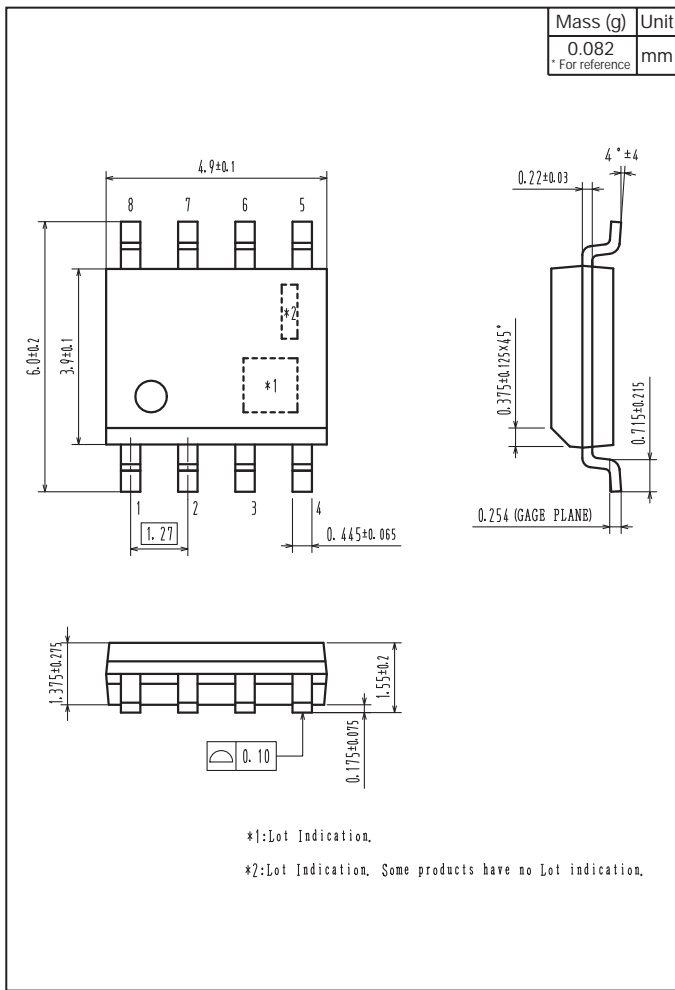




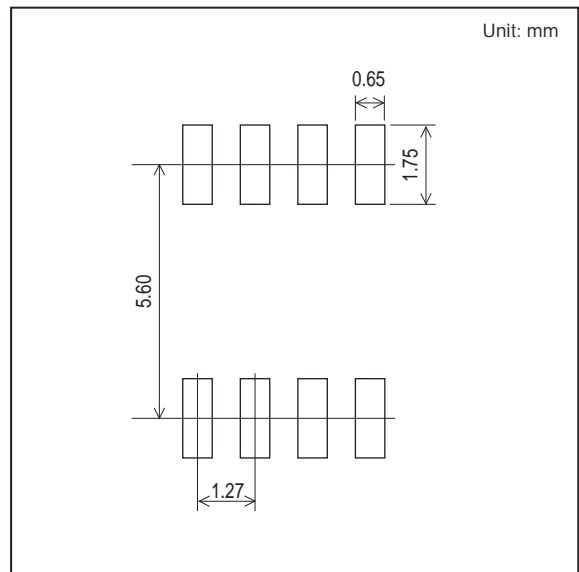


Outline Drawing

FW4604-TL-2W



Land Pattern Example



Note on usage : Since the FW4604 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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