

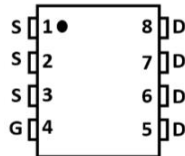
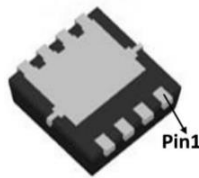
**Features**

- -30V, -30A
- $R_{DS(ON)} = 10m\Omega$  (Max.) @  $V_{GS} = -10V, I_D = -15A$
- High Power and Current Handling Capability
- Lead Free Product is Acquired
- Surface Mount Package

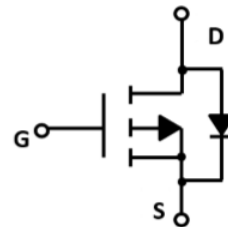
**Application**

- PWM Application
- Load Switch
- Power Management

**Package**



PDFN3\*3  
SFI4405AT



**Absolute Maximum Ratings**  $T_C = 25^\circ C$  unless otherwise specified

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	-30	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-90	A
$P_D$	Power Dissipation <sup>note2</sup>	40	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	34	$^\circ C/W$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

\*Drain current limited by maximum junction temperature

**Electrical Characteristics**  $T_c=25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = -30V, V_{GS} = 0V$	-	-	-1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage <sup>note1</sup>	$V_{DS} = V_{GS}, I_D = 250\mu A$	-0.8	-	-2.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = -10V, I_D = -15A$	-	-	10	m $\Omega$
		$V_{GS} = -4.5V, I_D = -8A$	-	-	13	
$g_{FS}$	Forward Transconductance	$V_{DS} = -10V, I_D = -5A$	-	9	-	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1.0MHz$	-	2150	-	pF
$C_{oss}$	Output Capacitance		-	430	-	pF
$C_{riss}$	Reverse Transfer Capacitance		-	320	-	pF
$Q_g$	Total Gate Charge	$V_{DD} = -15V, I_D = -15A,$ $V_{GS} = -10V$	-	35	-	nC
$Q_{gs}$	Gate-Source Charge		-	5	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	10	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Pulse width  $\leq 300\mu s$ ; duty cycle  $\leq 2\%$ .

### Typical Performance Characteristics

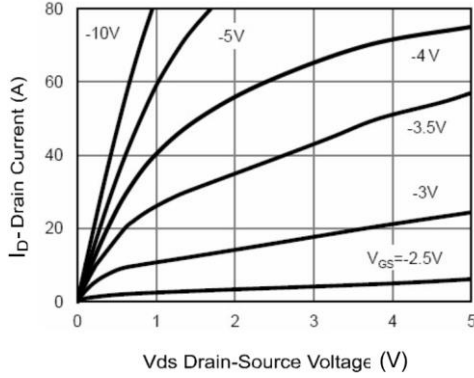


Figure 1. Output Characteristics

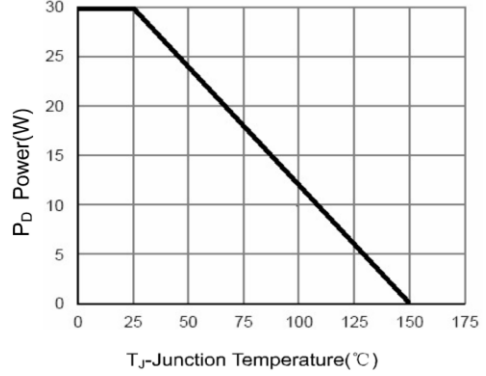


Figure 2. Power Dissipation

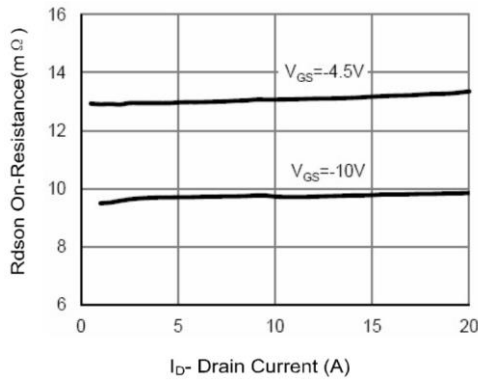


Figure 3. Drain-to-Source On Resistance

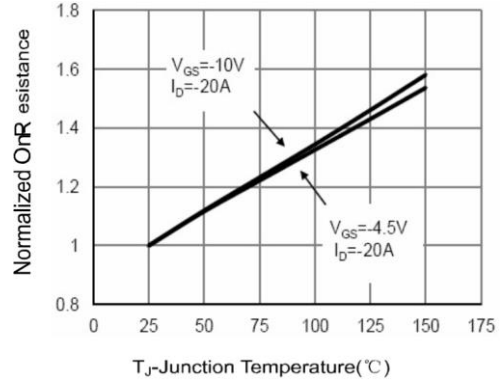


Figure 4. Drain-to-Source On Resistance

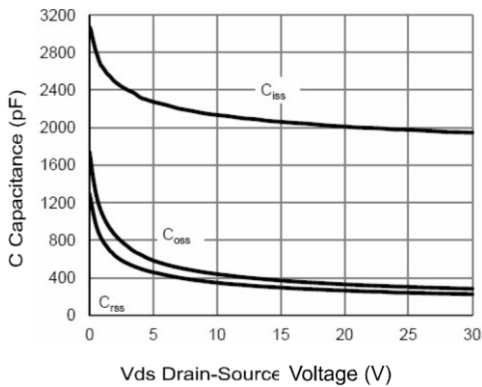


Figure 5. Capacitance Characteristics

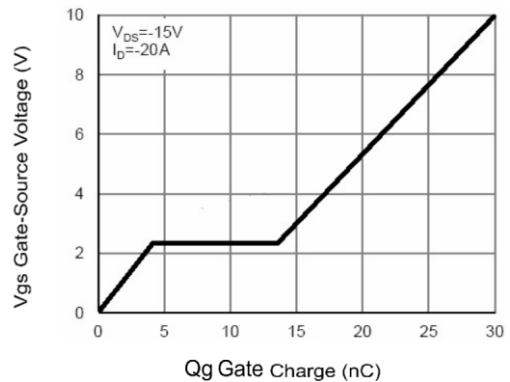


Figure 6. Gate Charge Characteristics

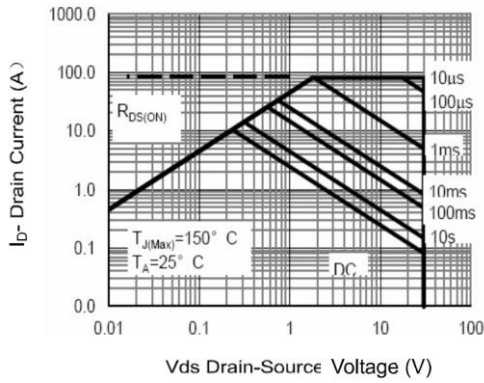


Figure 7. Maximum Safe Operating Area

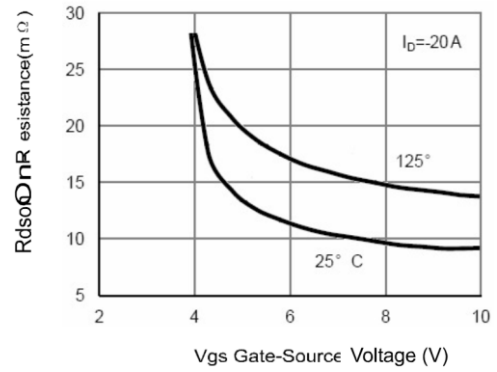


Figure 8. RDSON vs VGS

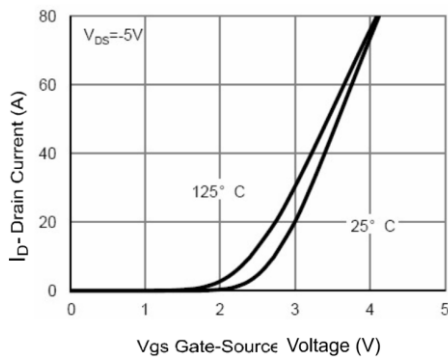


Figure 9. Transfer Characteristics

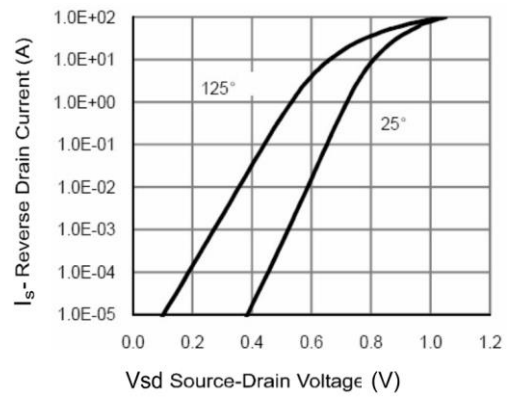


Figure 10. Source-Drain Diode Forward

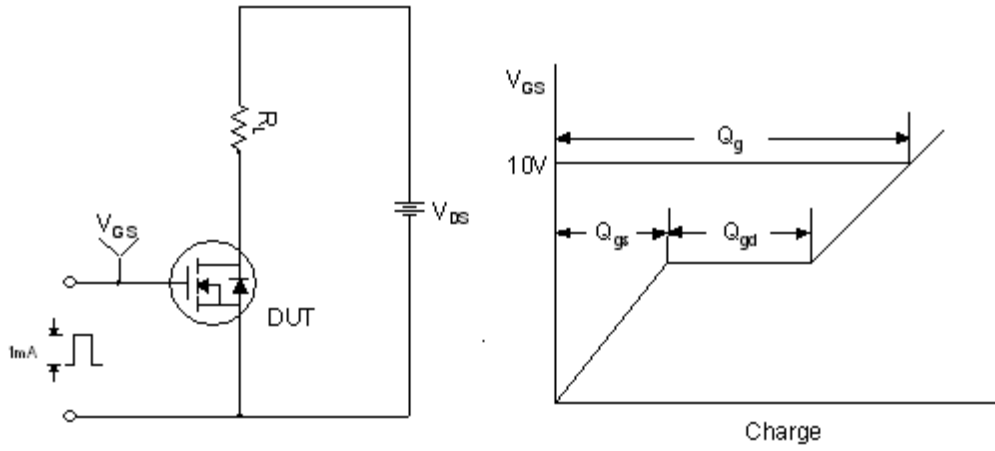


Figure 11. Gate Charge Test Circuit & Waveform

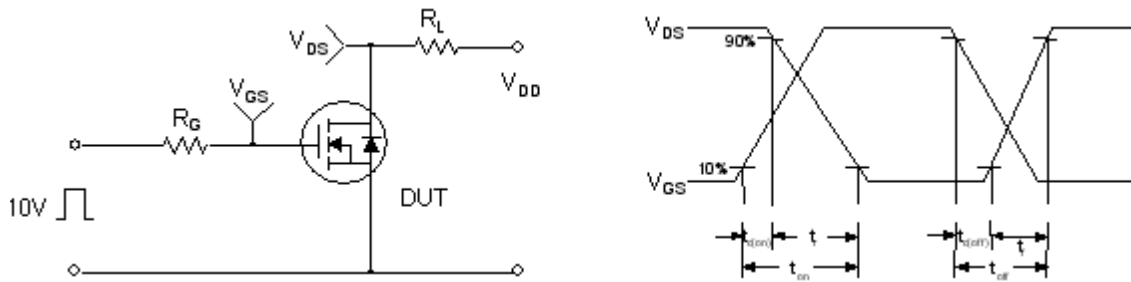


Figure 12. Resistive Switching Test Circuit & Waveforms

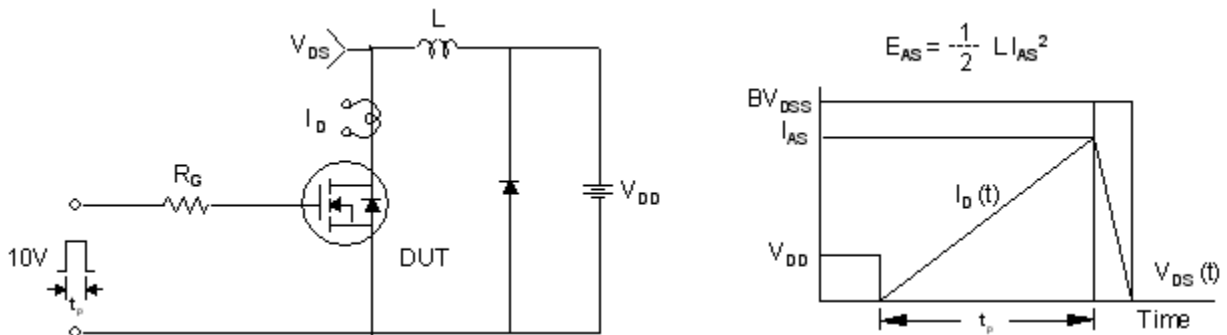


Figure 13. Unclamped Inductive Switching Test Circuit & Waveforms

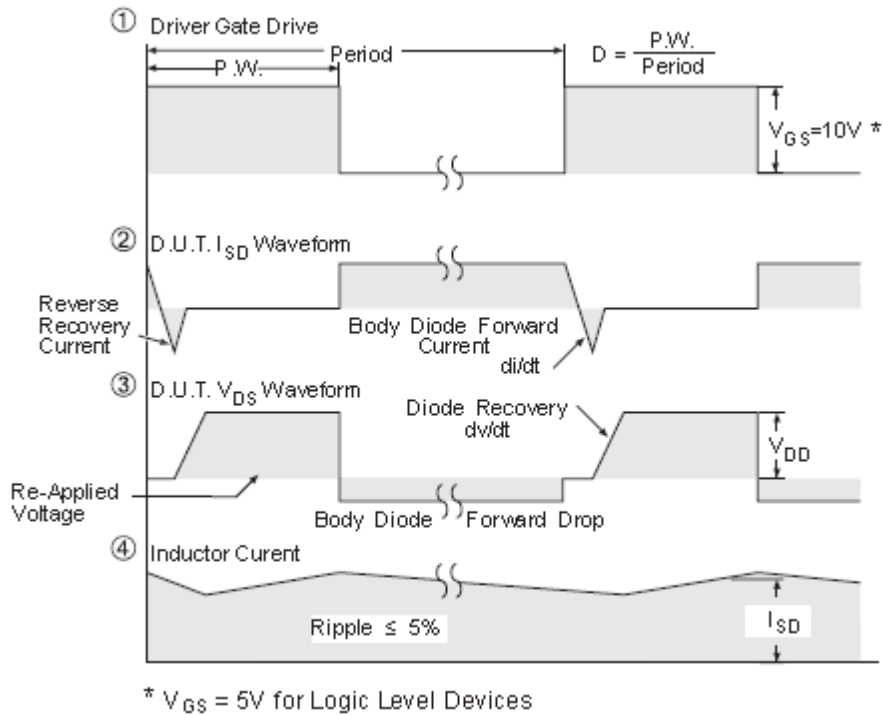
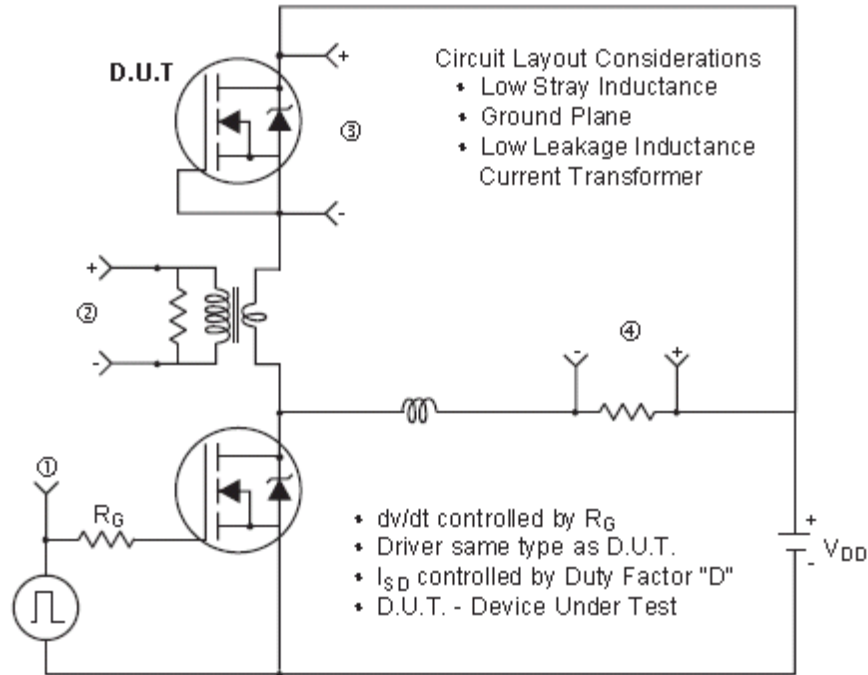
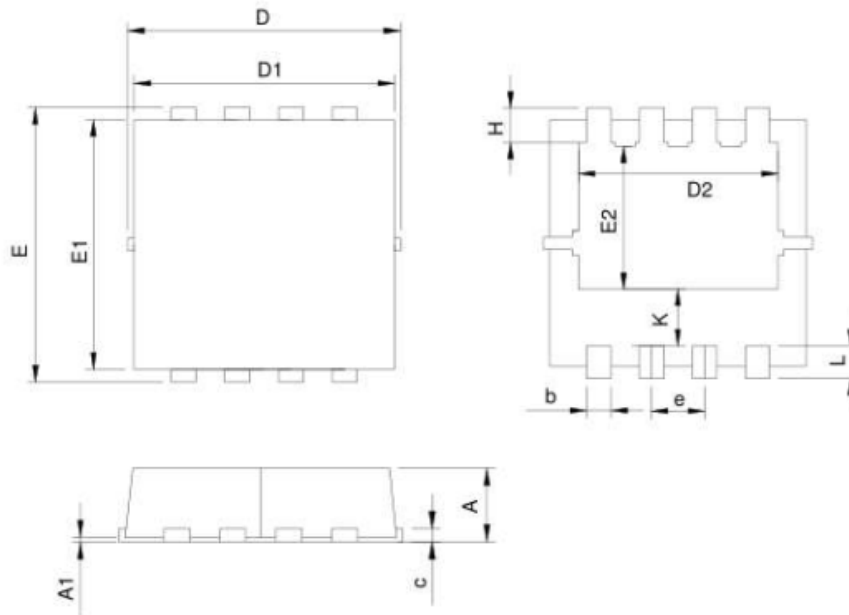


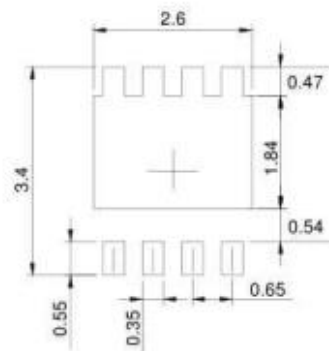
Figure 14. Peak Diode Recovery  $dv/dt$  Test Circuit & Waveforms (For N-channel)

•Dimensions(DFN3×3)



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm

## SFI4405AT/(30P30Q) Product Description

Silicon P-Channel MOSFET



### NOTE:

1. We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
2. Please do not exceed the absolute maximum ratings of the device when circuit designing.
3. Winsemi Microelectronics Co., Ltd reserved the right to make changes in this specification sheet and is subject to change without prior notice.

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