



ON Semiconductor®

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# SFT1431

## Power MOSFET 35V, 25mΩ, 11A, Single N-Channel

### Features

- Low On-Resistance
- High Speed Switching
- Low Gate Charge
- ESD Diode-Protected Gate
- Pb-free and RoHS Compliance

### Specifications

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

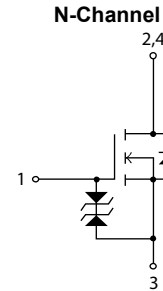
Parameter	Symbol	Value	Unit
Drain to Source Voltage	$V_{DSS}$	35	V
Gate to Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (DC)	$I_D$	11	A
Drain Current $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	$I_{DP}$	44	A
Power Dissipation	$P_D$	1.0	W
		$T_c = 25^\circ\text{C}$	15
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

### Thermal Resistance Ratings

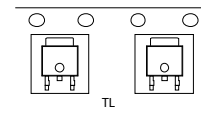
Parameter	Symbol	Value	Unit
Junction to Case Steady State	$R_{\theta JC}$	8.33	$^\circ\text{C/W}$
Junction to Ambient *1	$R_{\theta JA}$	125	

Note : \*1 Insertion mounted

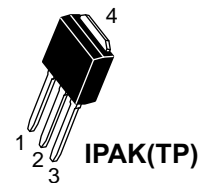
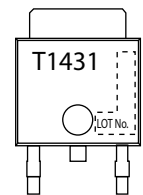
### Electrical Connection



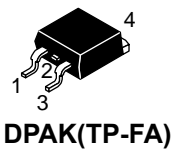
### Packing Type: TL



### Marking



IPAK (TP)



DPAK (TP-FA)

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.

### ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.

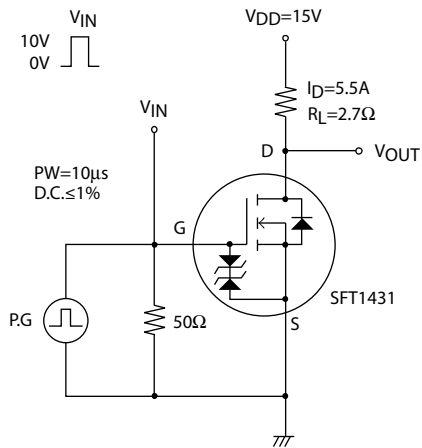
# SFT1431

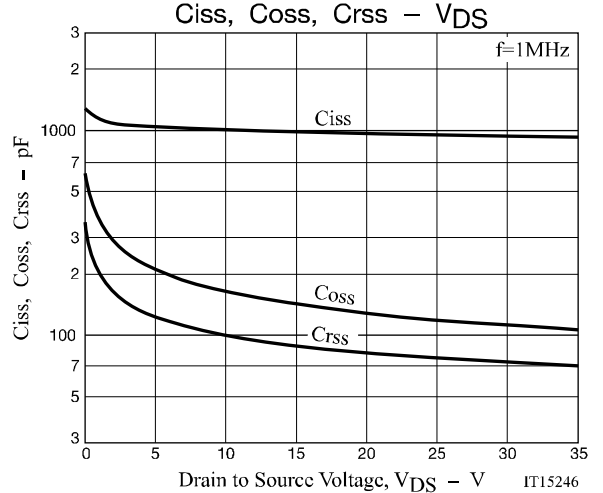
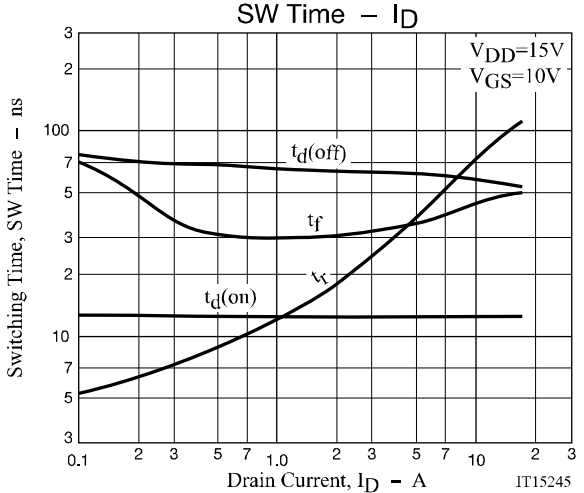
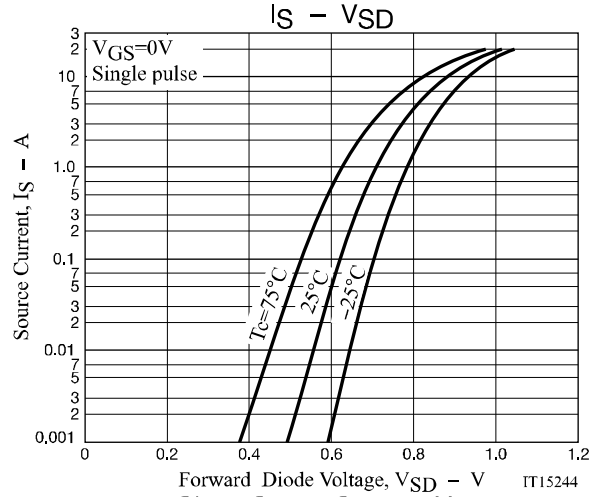
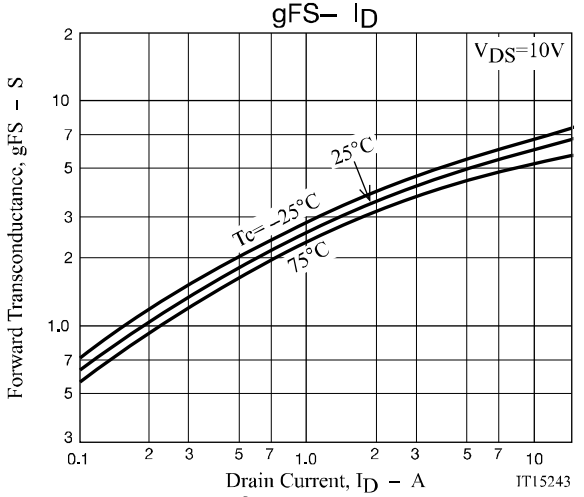
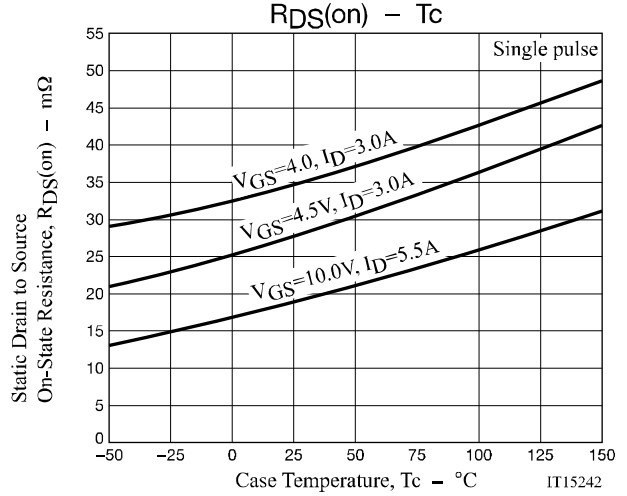
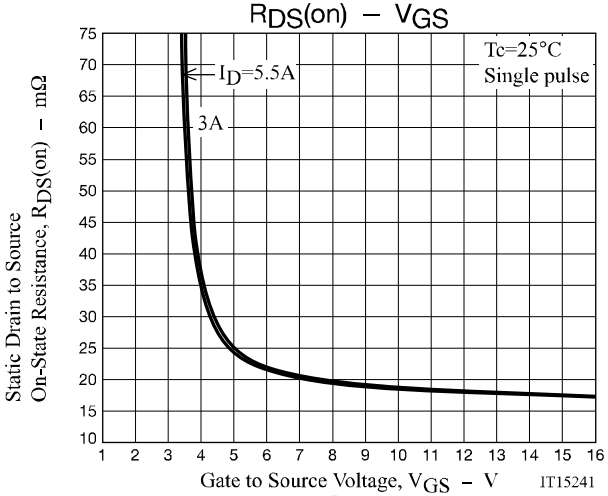
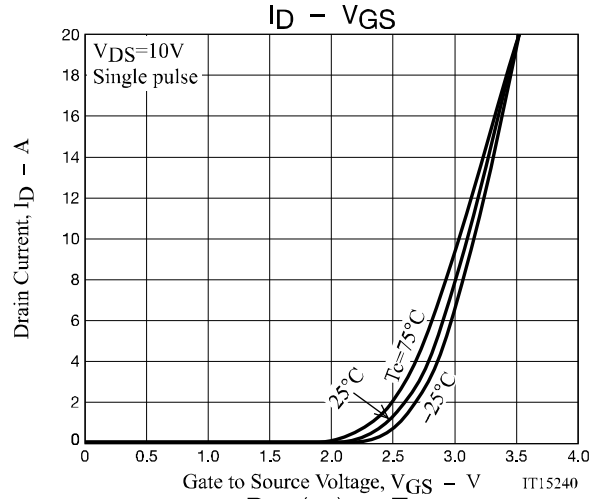
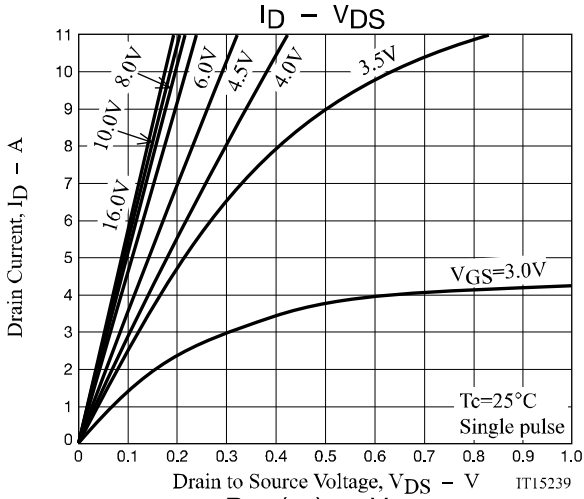
## Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	35			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=35\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	1.2		2.6	V
Forward Transconductance	$g_{FS}$	$V_{DS}=10\text{V}, I_D=5.5\text{A}$		5		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=5.5\text{A}, V_{GS}=10\text{V}$		19	25	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=3\text{A}, V_{GS}=4.5\text{V}$		28	39.5	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=3\text{A}, V_{GS}=4\text{V}$		35	49	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20\text{V}, f=1\text{MHz}$		960		$\text{pF}$
Output Capacitance	$C_{oss}$			130		$\text{pF}$
Reverse Transfer Capacitance	$C_{rss}$			84		$\text{pF}$
Turn-ON Delay Time	$t_{d(on)}$		See specified Test Circuit.		12	
Rise Time	$t_r$			40		ns
Turn-OFF Delay Time	$t_{d(off)}$			60		ns
Fall Time	$t_f$			36		ns
Total Gate Charge	$Q_g$	$V_{DS}=20\text{V}, V_{GS}=10\text{V}, I_D=11\text{A}$		17.3		nC
Gate to Source Charge	$Q_{gs}$			3.2		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			3.6		nC
Forward Diode Voltage	$V_{SD}$	$I_S=11\text{A}, V_{GS}=0\text{V}$		0.88	1.2	V

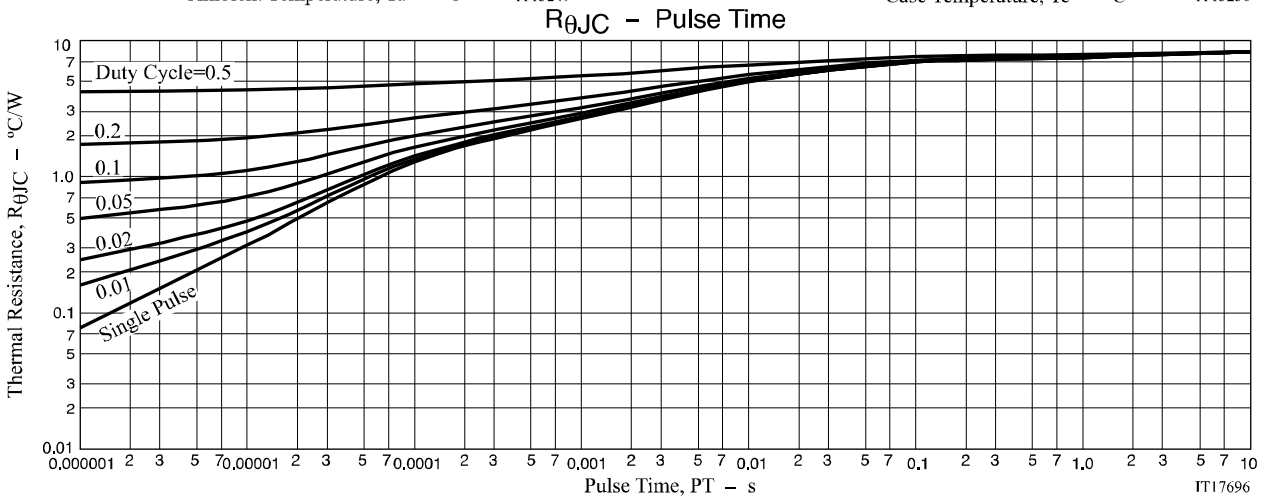
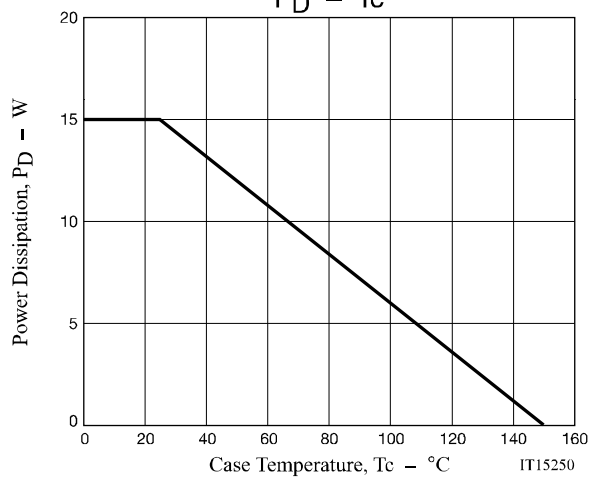
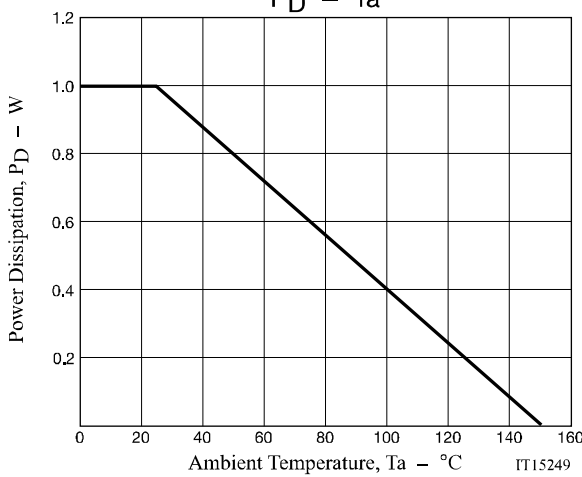
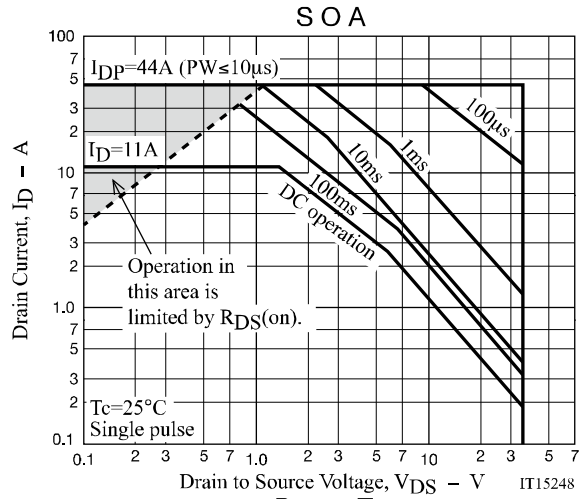
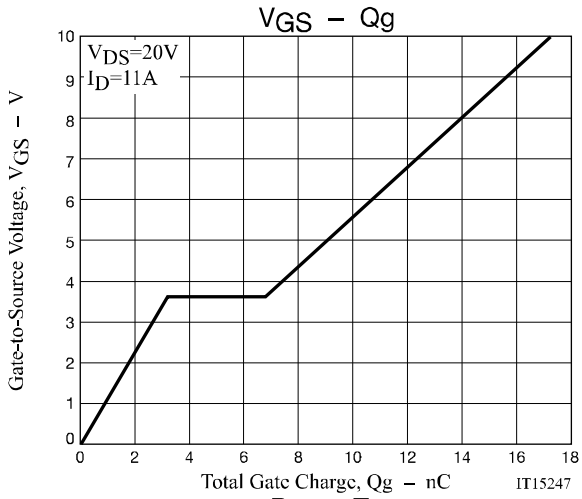
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## Switching Time Test Circuit





# SFT1431



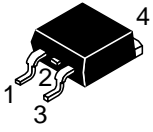
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## Package Dimensions

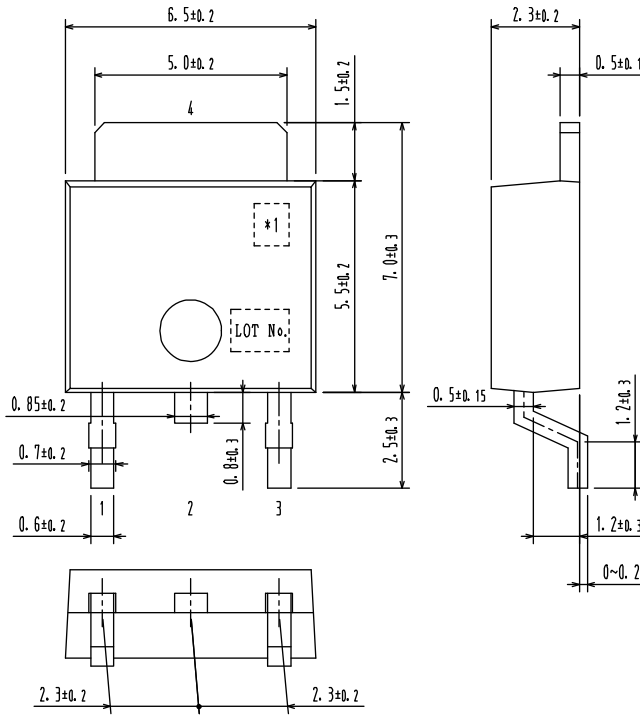
SFT1431-TL-E/ SFT1431-TL-W

## DPAK/TP-FA

unit : mm



- 1:Gate
- 2:Drain
- 3:Source
- 4:Drain



Pin 2 is idle pin with electrical designation only carried.

\*1:Lot indication

## Recommended Soldering Footprint

