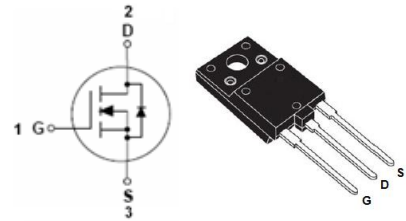


### Features

- Low on-resistance
- Low gate charge
- Full isolated TO-3PF plastic package
- HBM: JESD22-A114-B: 1C

HF



TO-3PF

### Mechanical Data

- Case: TO-3PF
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin-Plated Leads, Solderability-per MIL-STD-202, Method 208

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL3N150FW	TO-3PF	30 pcs / Tube	3N150

### Maximum Ratings (@ T<sub>C</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>	1500	V
Gate-to-Source Voltage	V <sub>GSS</sub>	±30	V
Continuous Drain Current (T <sub>C</sub> = 25°C)	I <sub>D</sub>	3	A
Pulsed Drain Current (T <sub>C</sub> = 25°C)	I <sub>DM</sub>	12	A
Single Pulse Avalanche Energy <sup>*3</sup>	E <sub>AS</sub>	30	mJ

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T <sub>C</sub> = 25°C)	P <sub>D</sub>	62.5	W
Thermal Resistance Junction-to-Case	R <sub>θJC</sub>	2	°C/W
Thermal Resistance Junction-to-Air	R <sub>θJA</sub>	50	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
$V_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	1500	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 1500V, V_{GS} = 0V$	-	-	10	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$R_{DS(ON)}$	Drain-Source On-resistance <sup>*2</sup>	$V_{GS} = 10V, I_D = 1.5A$	-	6	8	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.6	5	V
$R_g$	Gate input resistance	$V_{GS}=0V, f=1MHz$	-	2	-	$\Omega$
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V$	-	1800	-	pF
$C_{OSS}$	Output Capacitance	$V_{DS} = 25V$	-	110	-	
$C_{RSS}$	Reverse Transfer Capacitance	$f = 1.0MHz$	-	15	-	
<b>Switching Characteristics</b>						
$t_{d(ON)}$	Turn-on Delay Time <sup>*4</sup>	$V_{DD} = 600V$ $R_G = 10\Omega$ $I_D = 3A$	-	15.1	-	ns
$t_r$	Turn-on Rise Time <sup>*4</sup>		-	19.4	-	
$t_{d(OFF)}$	Turn-Off Delay Time <sup>*4</sup>		-	25.6	-	
$t_f$	Turn-Off Fall Time <sup>*4</sup>		-	76.2	-	
$Q_G$	Total Gate-Charge	$V_{DD} = 960V$	-	45	-	nC
$Q_{GS}$	Gate to Source Charge	$V_{GS} = 10V$	-	7.5	-	
$Q_{GD}$	Gate to Drain ( "Miller" ) Charge	$I_D = 3A$	-	21.2	-	
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage <sup>*2</sup>	$I_{SD} = 3A, V_{GS} = 0V$	-	-	1.5	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F = 1.5A, V_{GS} = 0V$ $di/dt = 100A/\mu s$	-	1	-	$\mu s$
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	6.6	-	$\mu C$

Notes:

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
3. The  $E_{AS}$  data shows Max. rating. The test condition is  $V_{DD} = 50V, V_{GS} = 15V, L = 10mH$
4. Guaranteed by design, not subject to production

Ratings and Characteristic Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

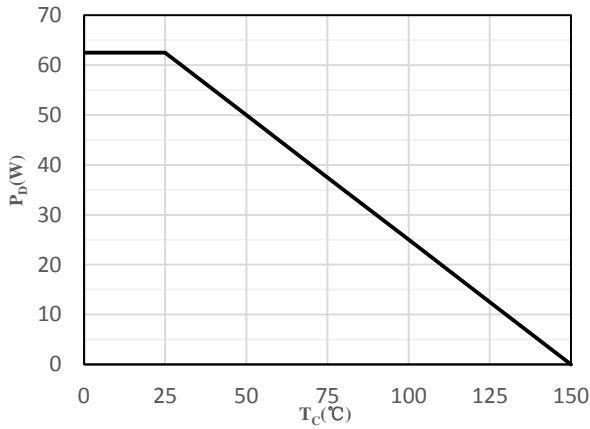


Fig 1 Power Dissipation

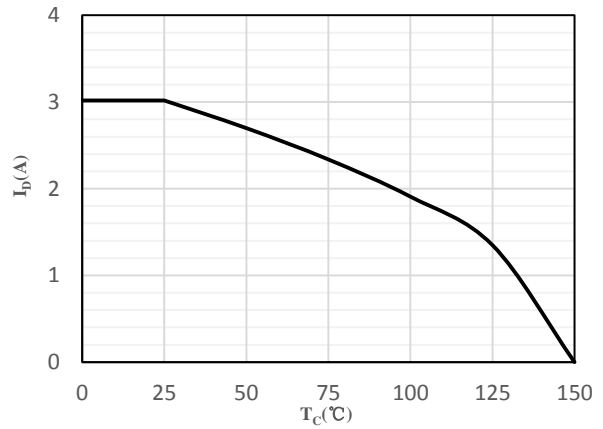


Fig 2 Drain Current

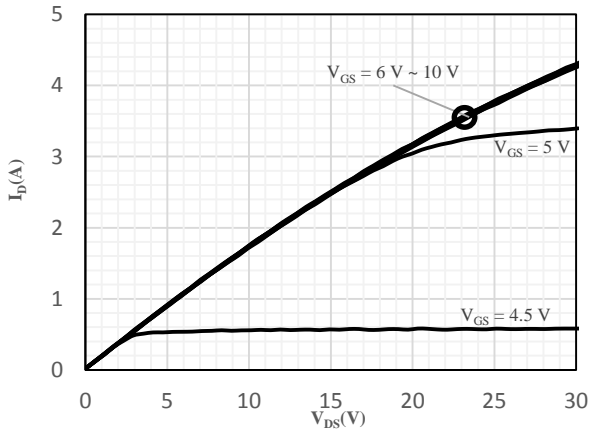


Fig 3 Typical Output Characteristics

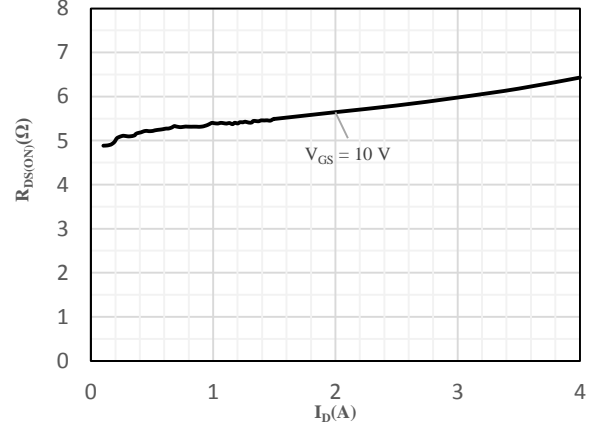


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

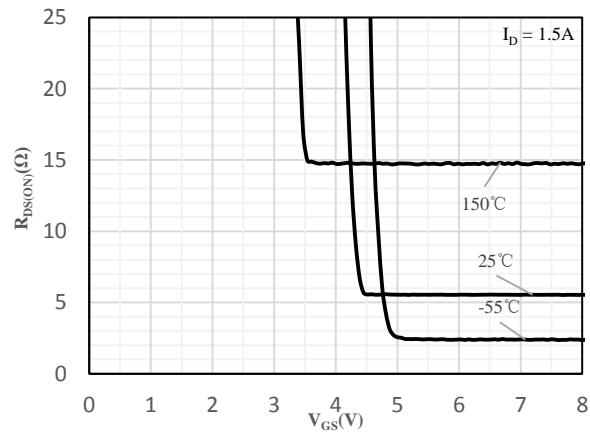


Fig 5 On-Resistance vs. Gate-Source Voltage

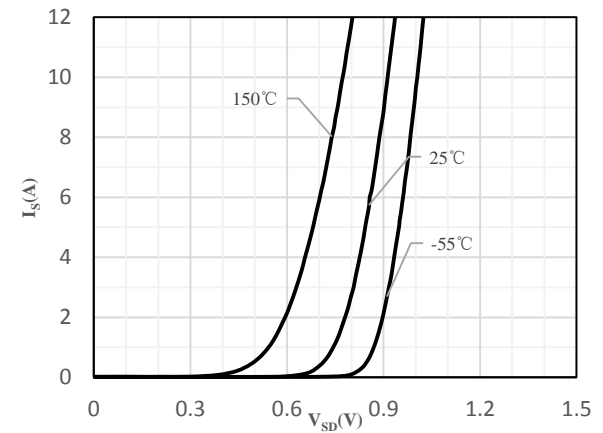


Fig 6 Body-Diode Characteristics

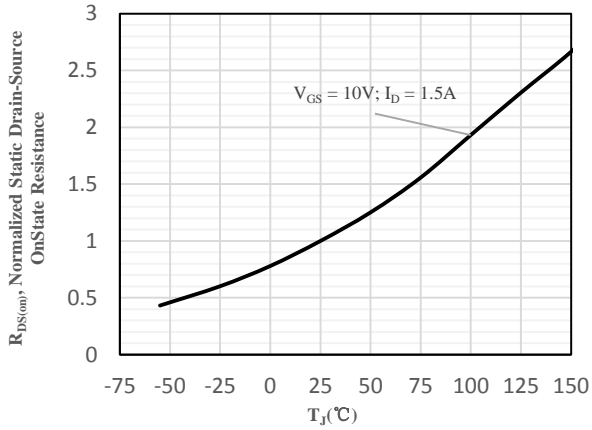


Fig 7 Normalized On-Resistance vs. Junction Temperature

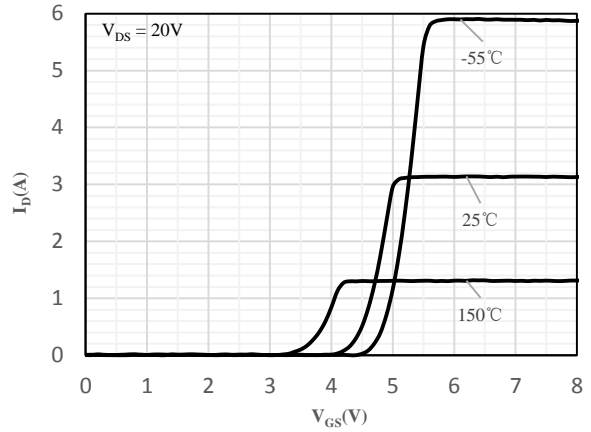


Fig 8 Transfer Characteristics

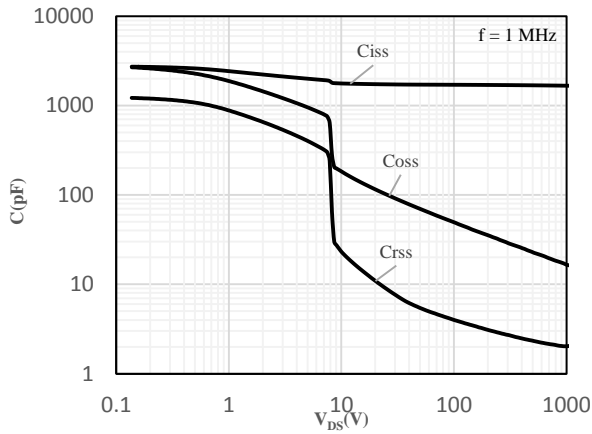


Fig 9 Capacitance Characteristics

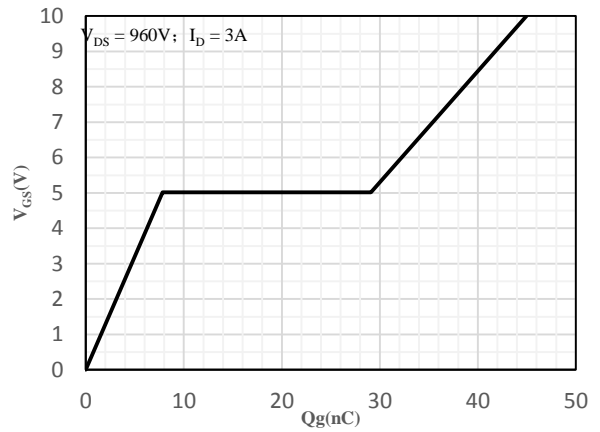


Fig 10 Gate-Charge Characteristics

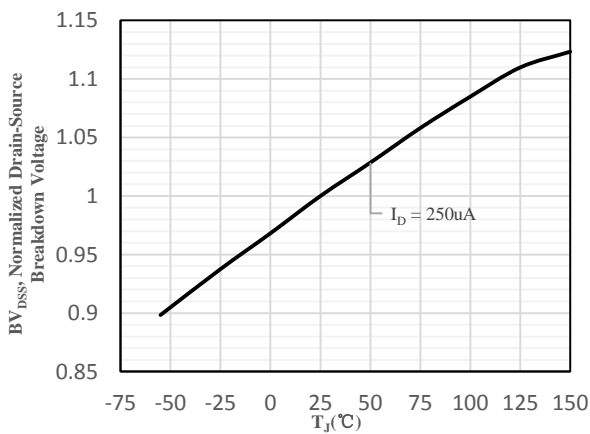


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

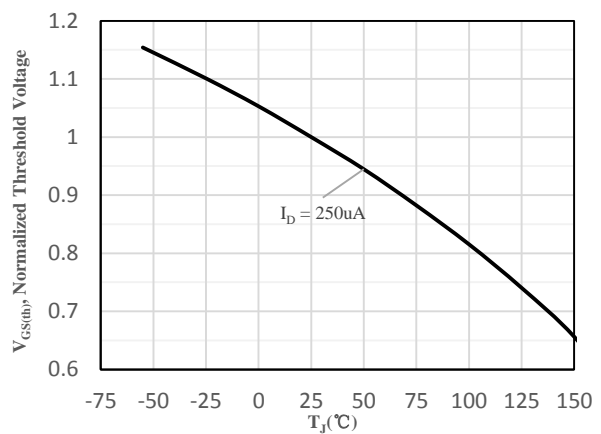


Fig 12 Normalized  $V_{GS(th)}$  vs. Junction Temperature

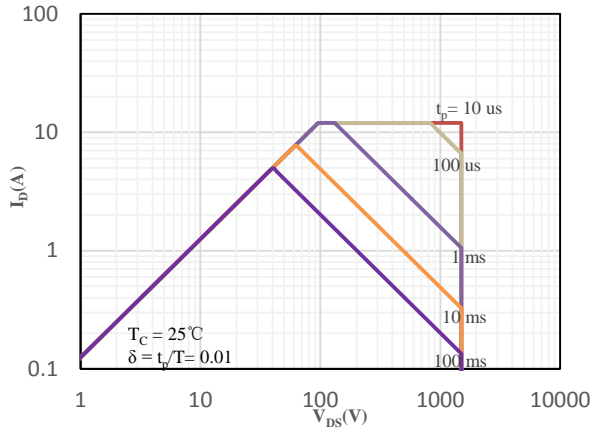


Fig 13 Safe Operation Area

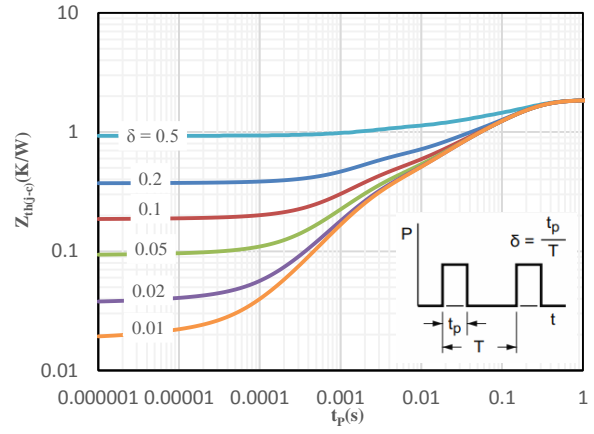
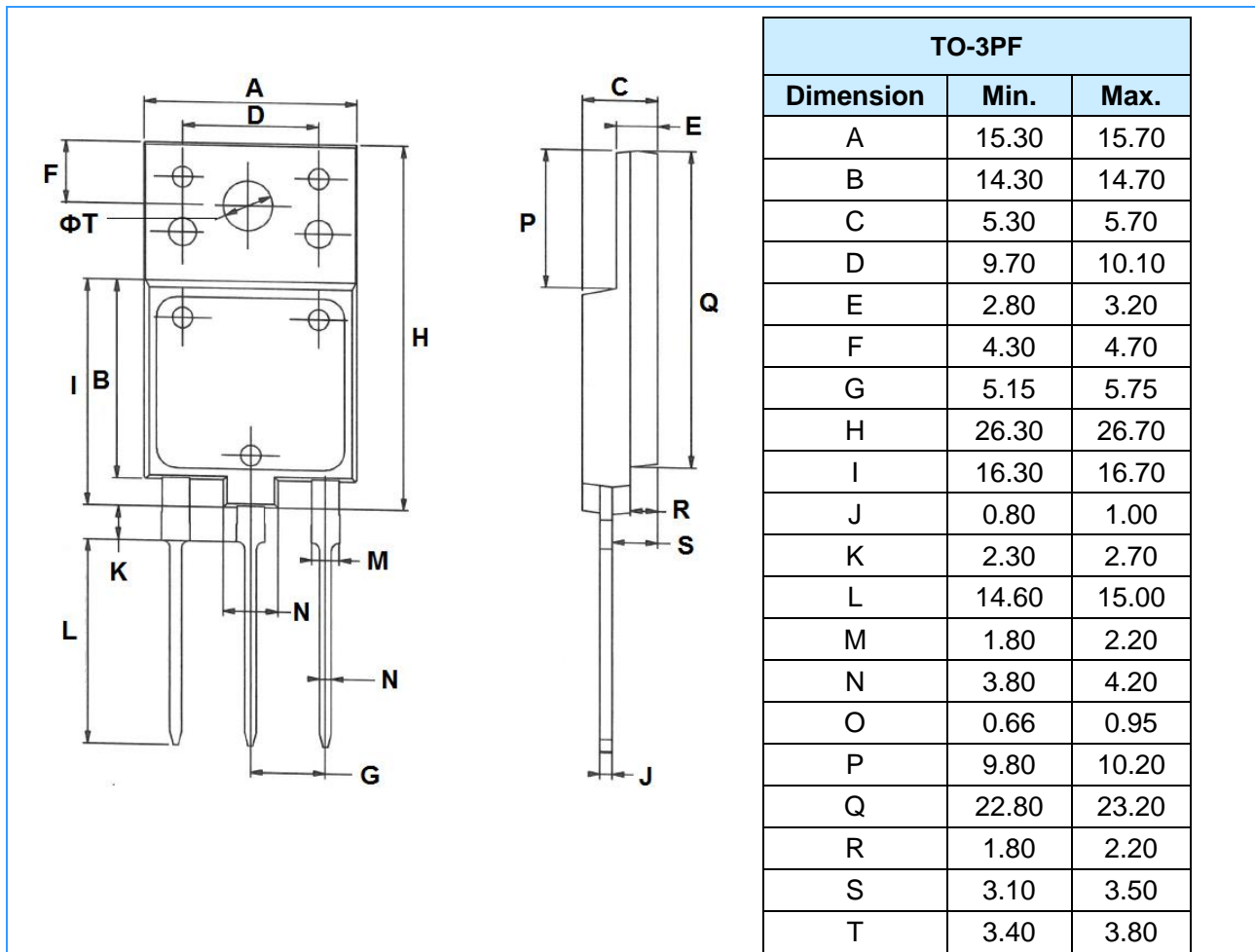


Fig 14 Maximum transient thermal impedance

**Package Outline Dimensions** (Unit: mm)



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