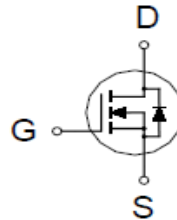
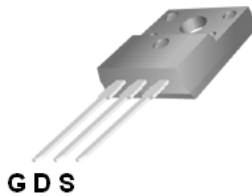


# P8315ATF

## N-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
150V	83m $\Omega$ @ $V_{GS} = 10V$	13.5A



### TO-220F

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS	
Drain-Source Voltage	$V_{DS}$	150	V	
Gate-Source Voltage	$V_{GS}$	$\pm 30$		
Continuous Drain Current	$I_D$	$T_c = 25\text{ }^\circ\text{C}$	13.5	A
		$T_c = 100\text{ }^\circ\text{C}$	8.5	
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	50		
Avalanche Current	$I_{AS}$	17		
Avalanche Energy <sup>2</sup>	$E_{AS}$	163	mJ	
Power Dissipation	$P_D$	$T_c = 25\text{ }^\circ\text{C}$	35	W
		$T_c = 100\text{ }^\circ\text{C}$	14	
Junction & Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$	

### THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.6	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		62.5	

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>Starting  $T_j = 25\text{ }^\circ\text{C}$ ,  $I_{AS} = 17\text{A}$ ,  $L = 1.1\text{mH}$ ,  $V_{DD} = 50\text{V}$

# P8315ATF

## N-Channel Enhancement Mode MOSFET

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)

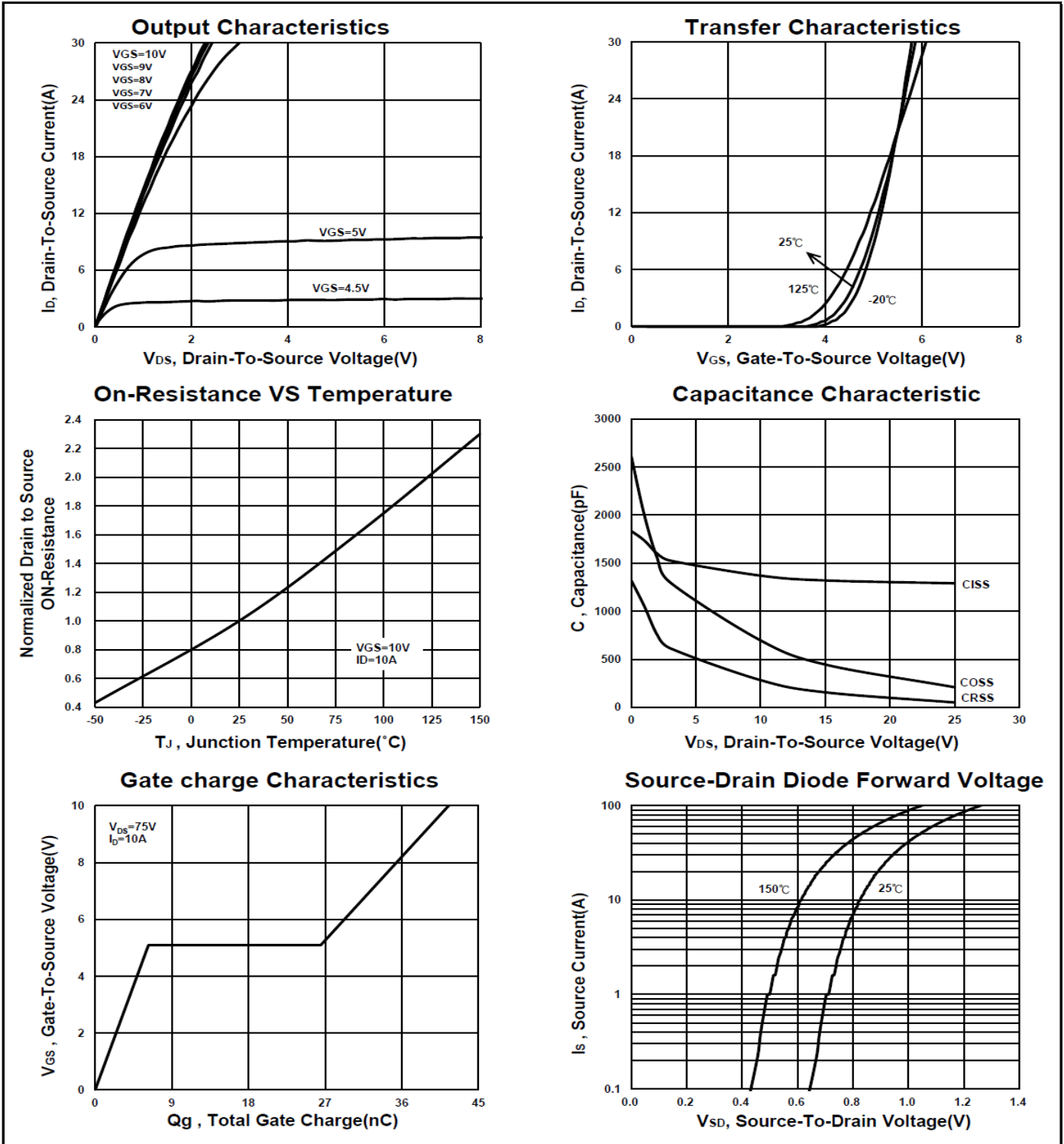
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	150			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2	3	4	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±30V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 120V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125 °C			10	
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		64	83	mΩ
		V <sub>GS</sub> = 7V, I <sub>D</sub> = 10A		68	88	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 10A		15		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, f = 1MHz		1290		pF
Output Capacitance	C <sub>oss</sub>			208		
Reverse Transfer Capacitance	C <sub>rss</sub>			51		
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 75V, I <sub>D</sub> = 10A		41.7		nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			6.7		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			20.7		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 75V, I <sub>D</sub> ≅ 10A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = 6Ω		14		nS
Rise Time <sup>2</sup>	t <sub>r</sub>			50		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			48		
Fall Time <sup>2</sup>	t <sub>f</sub>			38		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				13.5	A
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = 10A, V <sub>GS</sub> = 0V			1.6	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10A, dI <sub>F</sub> /dt = 100A / μS		122		nS
Reverse Recovery Charge	Q <sub>rr</sub>				620	

<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

# P8315ATF

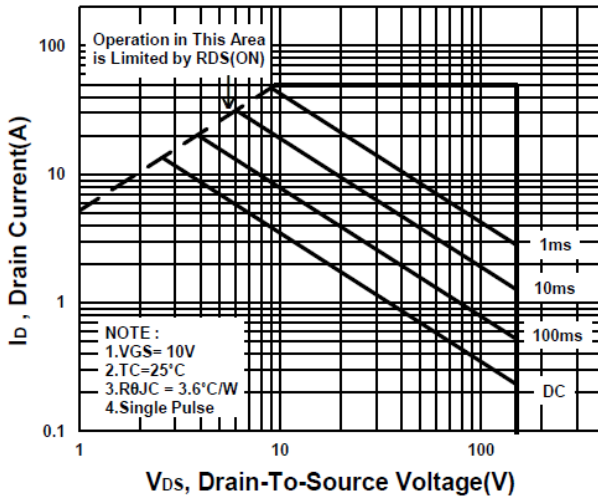
## N-Channel Enhancement Mode MOSFET



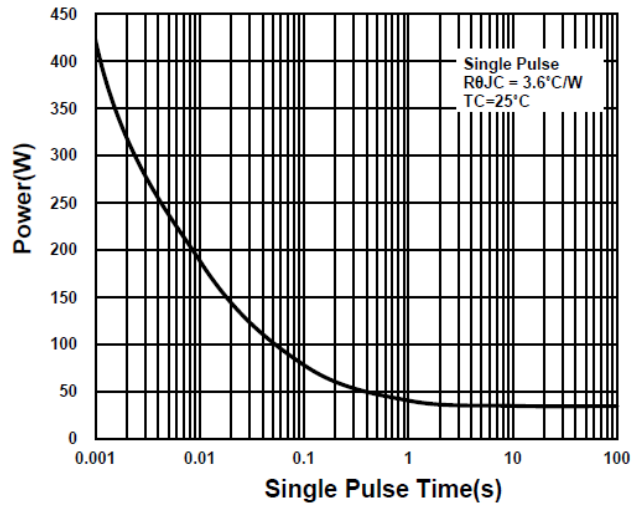
# P8315ATF

## N-Channel Enhancement Mode MOSFET

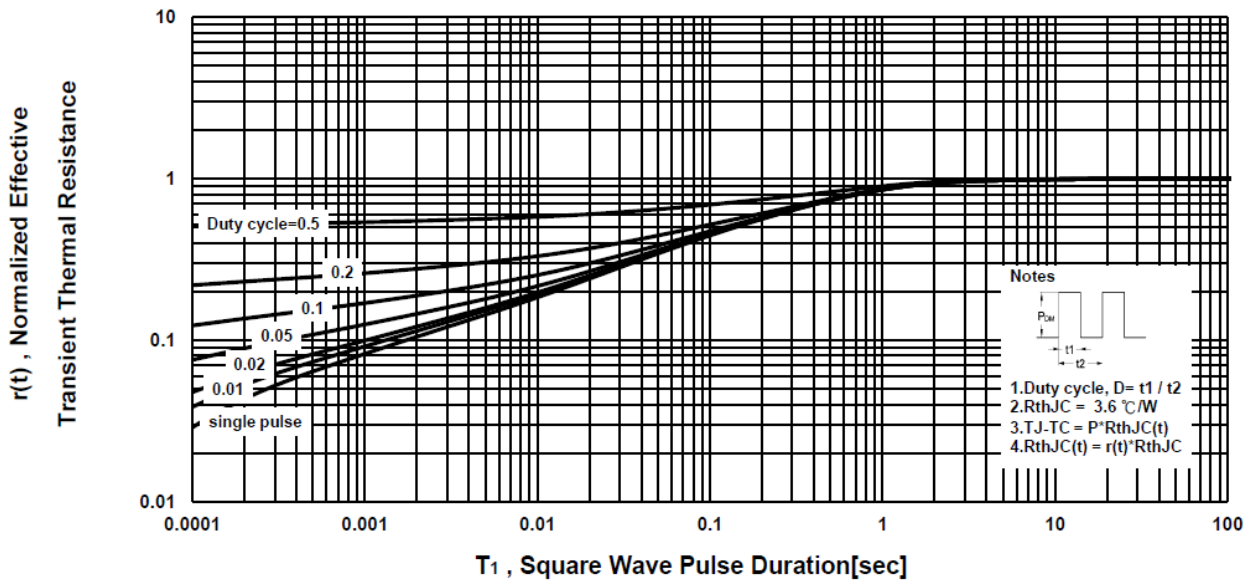
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



# P8315ATF

## N-Channel Enhancement Mode MOSFET

### Package Dimension

### TO-220F (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.2		4.93	e	2.05	2.55	3.05
A1	2.34		3.1	F	27.45		30.6
B	17.77		20.3	G	7.72		9.3
b	0.6		1.05	H	6.1		7.1
b1	0.9	1.23	1.62	L	12.5		14.5
b2	0.6		1.9	L1	1.97		3.8
c	0.4		1.0	P	2.98		3.4
D	14.7		16.4	Q	2.1		2.96
D1	6.4		7.5	q	3.0		3.8
E	9.7		10.4				

