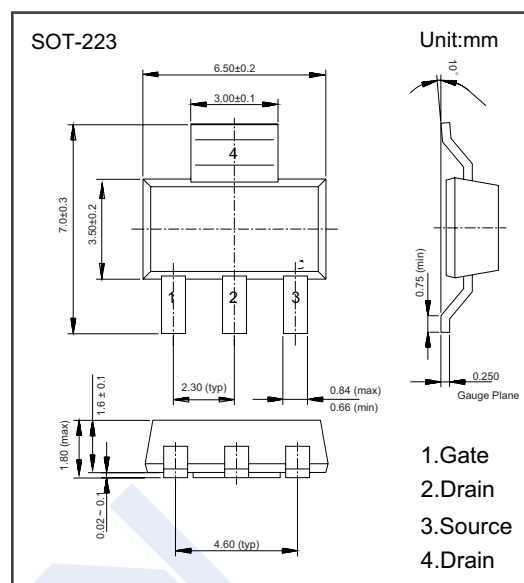


N-Channel MOSFET

FDT86102LZ

■ Features

- $V_{DS} (V) = 100V$
- $I_D = 6.6 A (V_{GS} = \pm 20V)$
- $R_{DS(ON)} < 28m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 38m\Omega (V_{GS} = 4.5V)$



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	6.6	A
Pulsed Drain Current		40	
Power Dissipation ^{1a}	P_D	2.2	W
Power Dissipation ^{1b}		1	
Single Pulse Avalanche Energy ³	E_{AS}	84	mJ
Thermal Resistance.Junction- to-Ambient ^{1a}	R_{thJA}	55	$^\circ C/W$
Thermal Resistance.Junction- to-Case ¹	R_{thJC}	12	
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to +150	

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$I_D=250\mu A$, $V_{GS}=0V$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V$, $V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V$, $V_{GS}=\pm 20V$			± 10	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	1		3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$, $I_D=6.6A$			28	$m\Omega$
		$V_{GS}=4.5V$, $I_D=5.5A$			38	
		$V_{GS}=10V$, $I_D=6.6A$, $T_J=125^\circ C$			46	
Forward Transconductance	g_{FS}	$V_{DS}=5V$, $I_D=6.6A$		26		S
Input Capacitance	C_{iss}	$V_{GS}=0V$, $V_{DS}=50V$, $f=1MHz$			1490	pF
Output Capacitance	C_{oss}				245	
Reverse Transfer Capacitance	C_{rss}				15	
Gate Resistance	R_g			0.5		Ω
Total Gate Charge	$Q_{g(TOT)}$	$V_{GS}=0V$ to $10V$			25	nC
Total Gate Charge	$Q_{g(TOT)}$	$V_{GS}=0V$ to $4.5V$			12	
Gate Source Charge	Q_{gs}	$V_{DS}=50V$, $I_D=6.6A$		2.6		nC
Gate Drain Charge	Q_{gd}			2.2		nC
Turn-On DelayTime	$t_{d(on)}$	$V_{GS}=10V$, $V_{DS}=50V$, $I_D=6.6A$, $R_{GEN}=6\Omega$			14	ns
Turn-On Rise Time	t_r				10	
Turn-Off DelayTime	$t_{d(off)}$				31	
Turn-Off Fall Time	t_f				10	
Body Diode Reverse Recovery Time	t_{rr}	$I_F=6.6A$, $dI/dt=100A/\mu s$			64	nC
Body Diode Reverse Recovery Charge	Q_{rr}				58	
Maximum Body-Diode Continuous Current	I_S				6.6	A
Diode Forward Voltage ²	V_{SD}	$I_S=6.6A$, $V_{GS}=0V$			1.3	V
		$I_S=1A$, $V_{GS}=0V$			1.2	V

NOTES:

1. $R_{\theta JA}$ is determined with the device mounted on a 1 in² pad 2 oz copper pad on a 1.5 x 1.5 in. board of FR-4 material. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.

a: 55 °C/W when mounted on a 1 in² pad of 2 oz copper

b: 118 °C/W when mounted on a minimum pad of 2 oz copper

2. Pulse Test: Pulse Width < 300 μs , Duty cycle < 2.0 %.

3. Starting $T_J = 25^\circ C$, $L = 1 mH$, $I_{AS} = 13 A$, $V_{DD} = 90 V$, $V_{GS} = 10 V$.

■ Marking

Marking	86102LZ K****
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N-Channel MOSFET

FDT86102LZ

Typical Characteristics

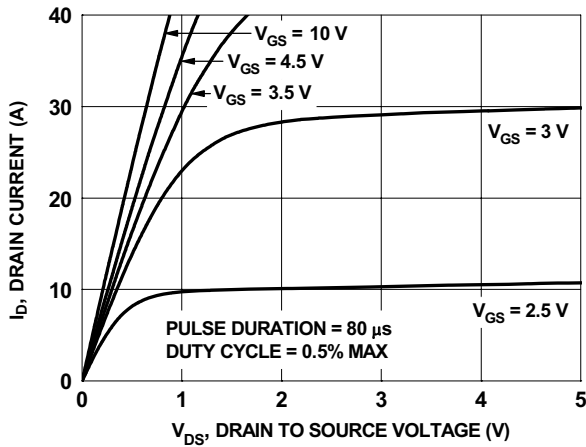


Figure 1. On-Region Characteristics

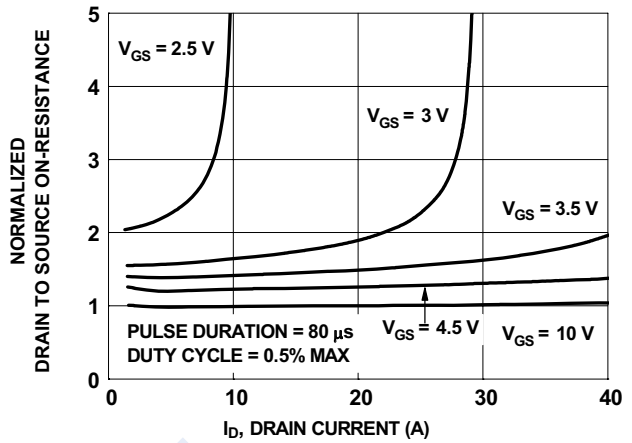


Figure 2. Normalized On-Resistance vs. Drain Current and Gate Voltage

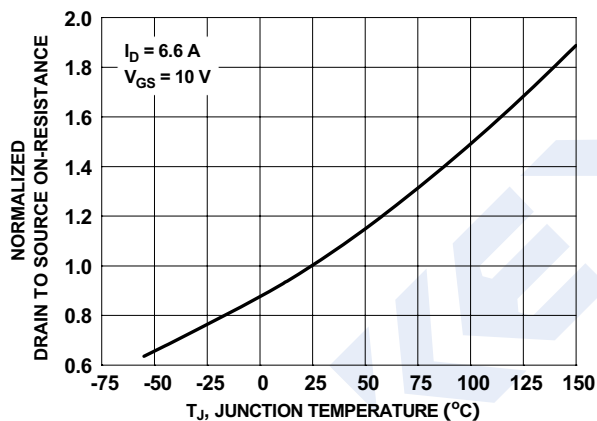


Figure 3. Normalized On-Resistance vs. Junction Temperature

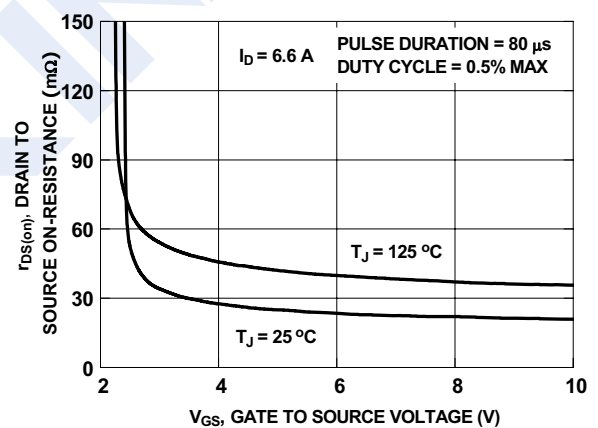


Figure 4. On-Resistance vs. Gate to Source Voltage

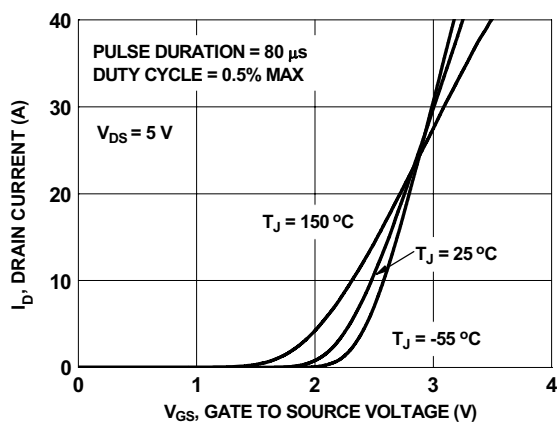


Figure 5. Transfer Characteristics

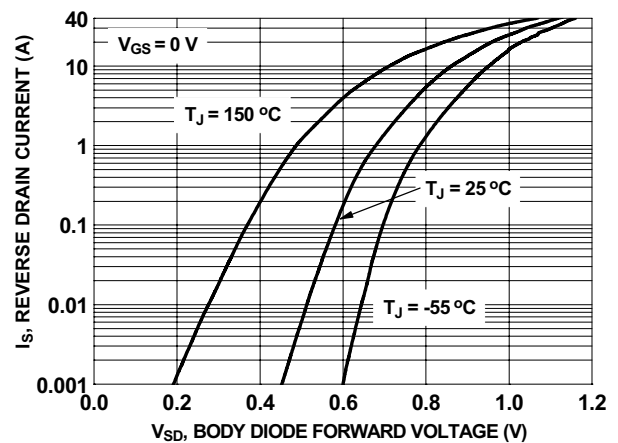


Figure 6. Source to Drain Diode Forward Voltage vs. Source Current

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Typical Characteristics

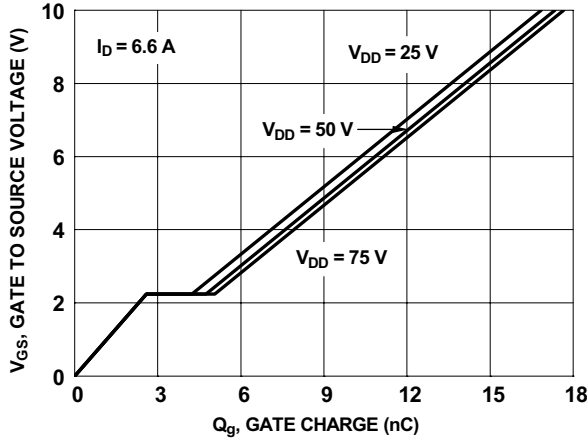


Figure 7. Gate Charge Characteristics

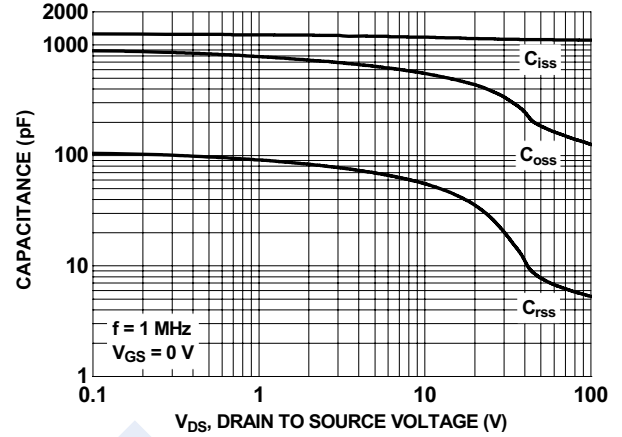


Figure 8. Capacitance vs Drain to Source Voltage

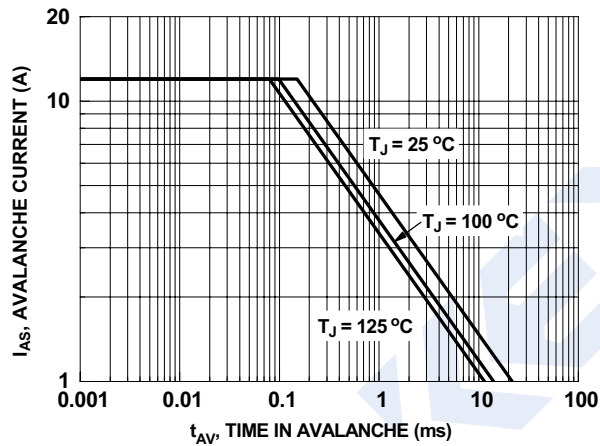


Figure 9. Unclamped Inductive Switching Capability

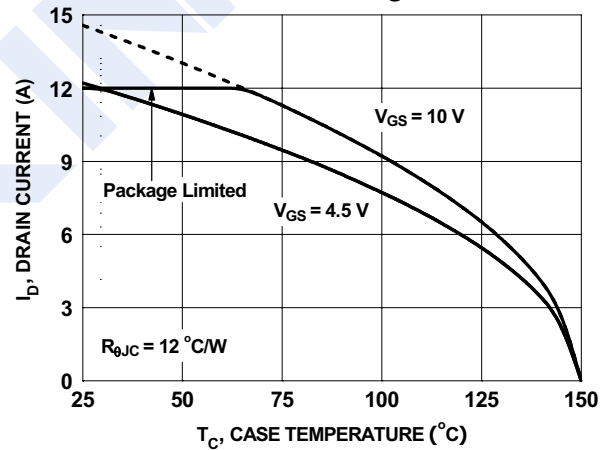


Figure 10. Maximum Continuous Drain Current vs Case Temperature

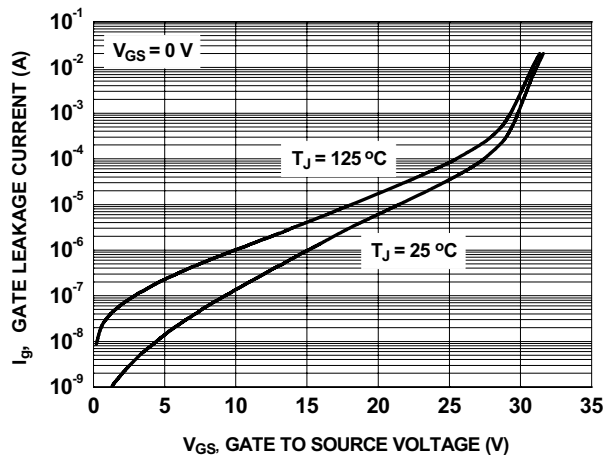


Figure 11. Gate Leakage Current vs Gate to Source Voltage

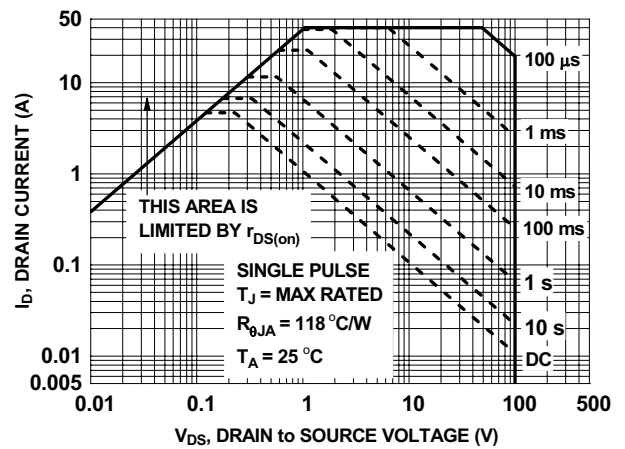


Figure 12. Forward Bias Safe Operating Area

N-Channel MOSFET

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■ Typical Characteristics

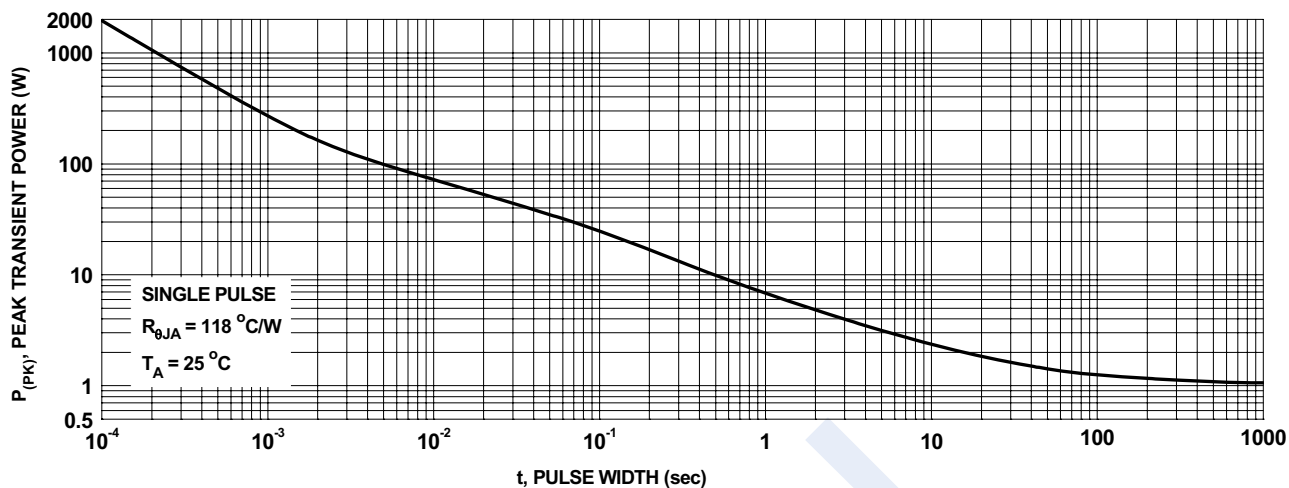


Figure 13. Single Pulse Maximum Power Dissipation

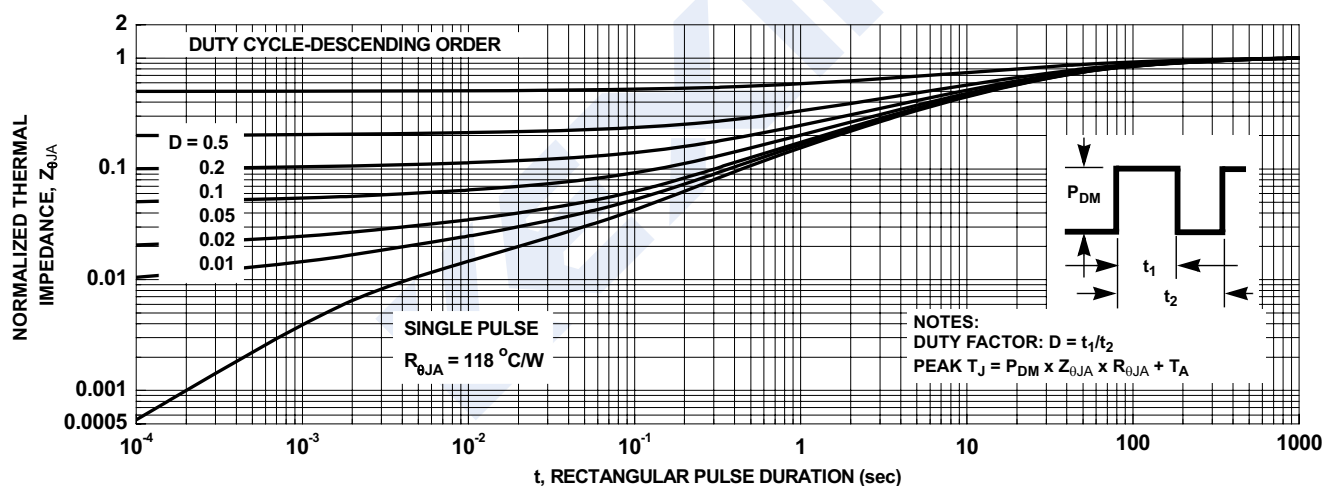


Figure 14. Junction-to-Ambient Transient Thermal Response Curve