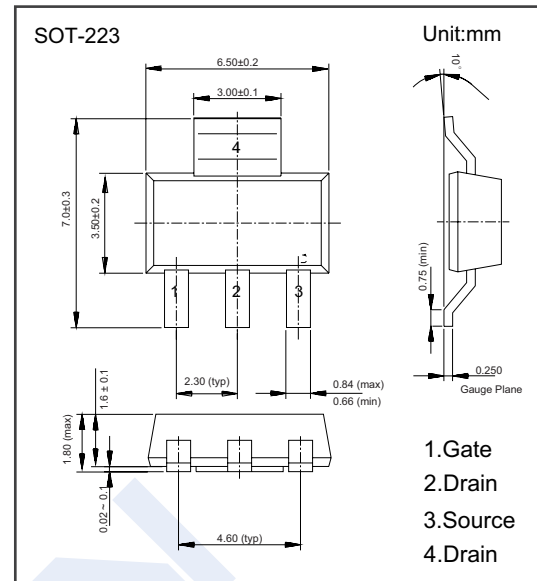


N-Channel MOSFET

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	EAS	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	

N-Channel MOSFET

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250μA, 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} =±20V			±10	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1		3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =6.6A			28	mΩ
		V _{GS} =4.5V, I _D =5.5A			38	
		V _{GS} =10V, I _D =6.6A, T _J =125°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		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =50V, I _D =6.6A, R _{GEN} =6Ω			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/μs			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_{θJA} 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_{θJC} is guaranteed by design while R_{θCA} 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 °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

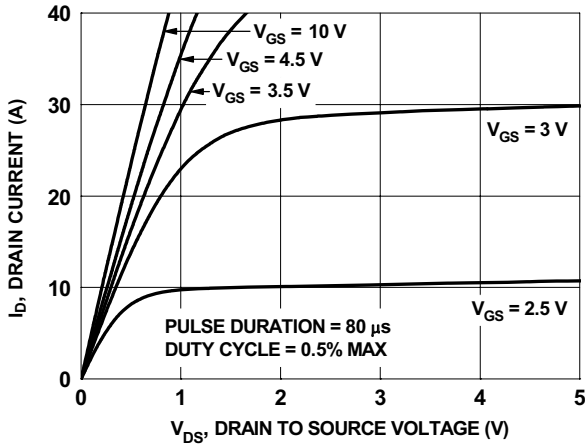


Figure 1. On-Region Characteristics

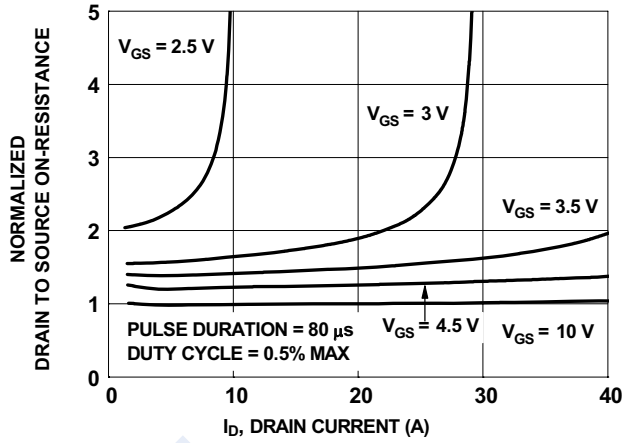


Figure 2. Normalized On-Resistance vs Drain Current and Gate Voltage

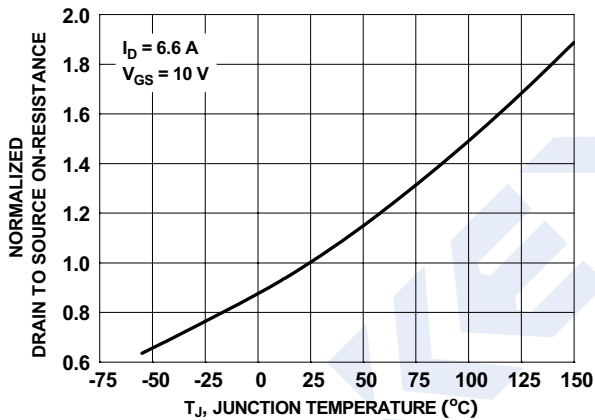


Figure 3. Normalized On-Resistance vs Junction Temperature

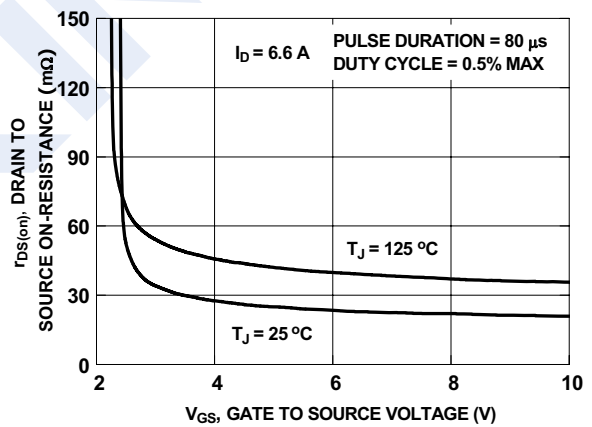


Figure 4. On-Resistance vs Gate to Source Voltage

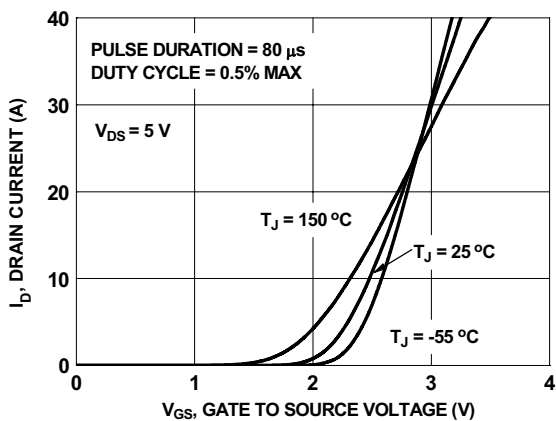


Figure 5. Transfer Characteristics

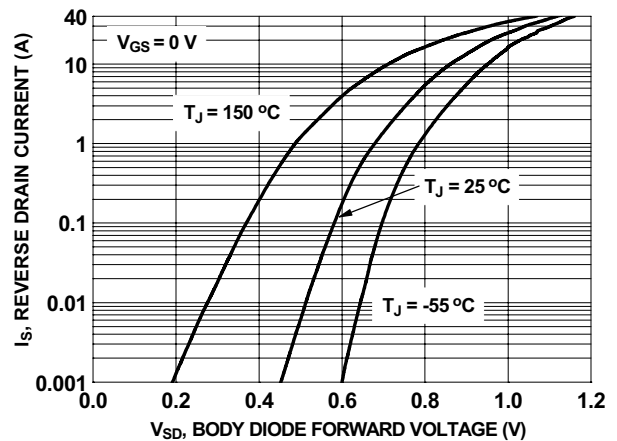


Figure 6. Source to Drain Diode Forward Voltage vs Source Current

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■ Typical Characteristics

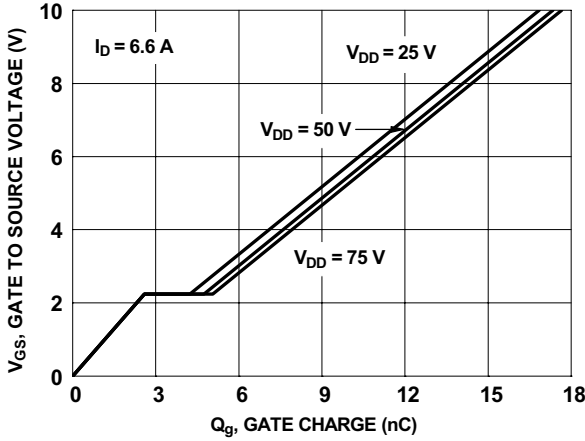


Figure 7. Gate Charge Characteristics

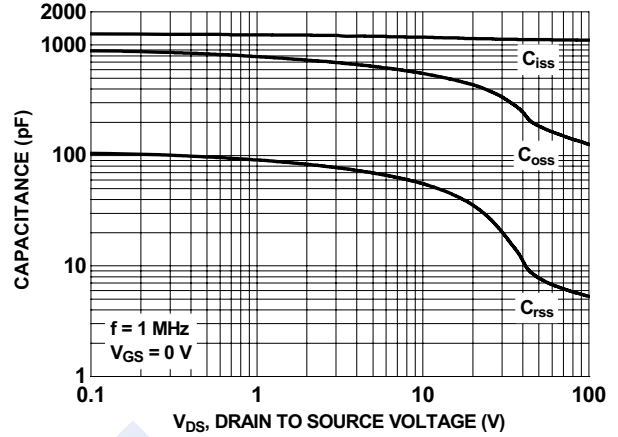


Figure 8. Capacitance vs Drain to Source Voltage

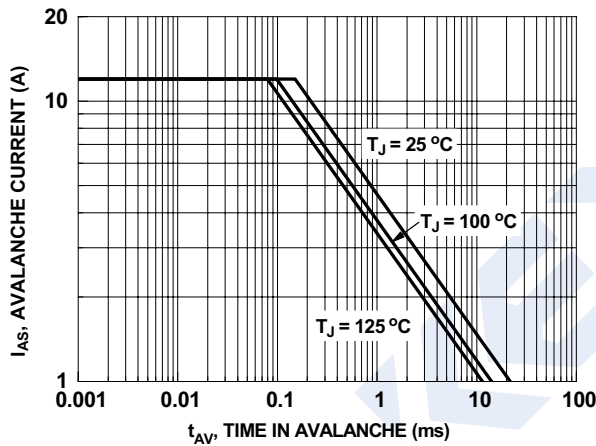


Figure 9. Unclamped Inductive Switching Capability

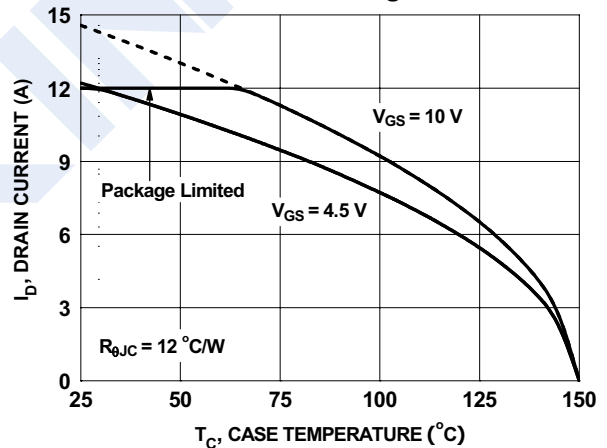


Figure 10. Maximum Continuous Drain Current vs Case Temperature

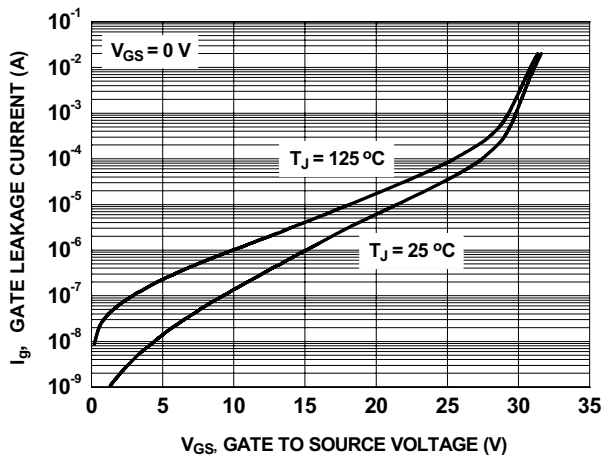


Figure 11. Gate Leakage Current vs Gate to Source Voltage

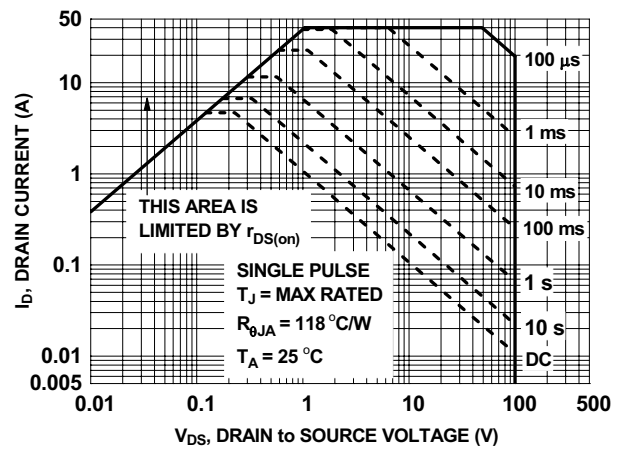


Figure 12. Forward Bias Safe Operating Area

N-Channel MOSFET FDT86102LZ

■ Typical Characteristics

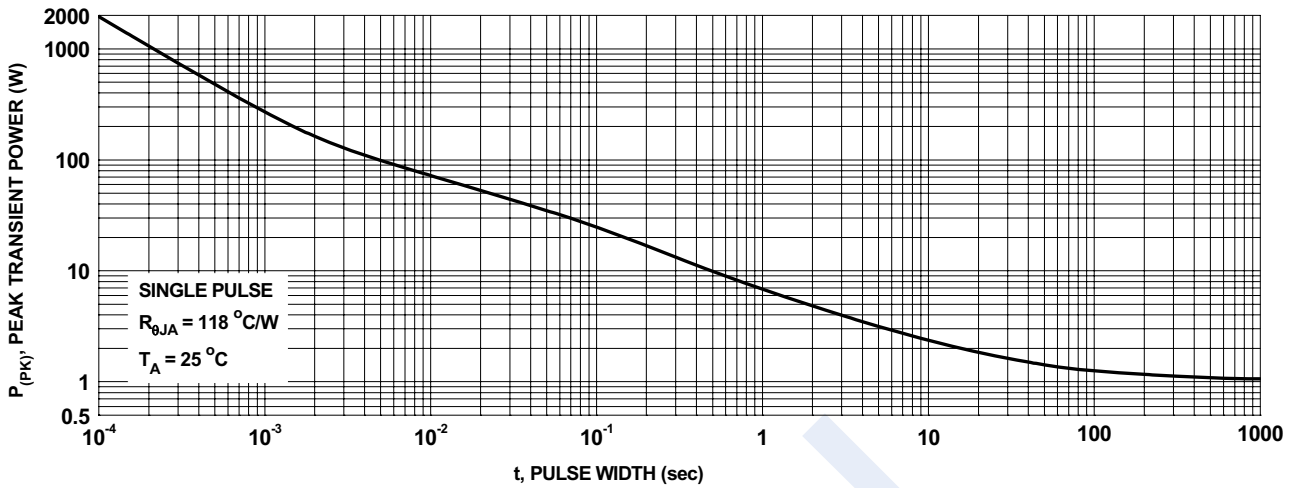


Figure 13. Single Pulse Maximum Power Dissipation

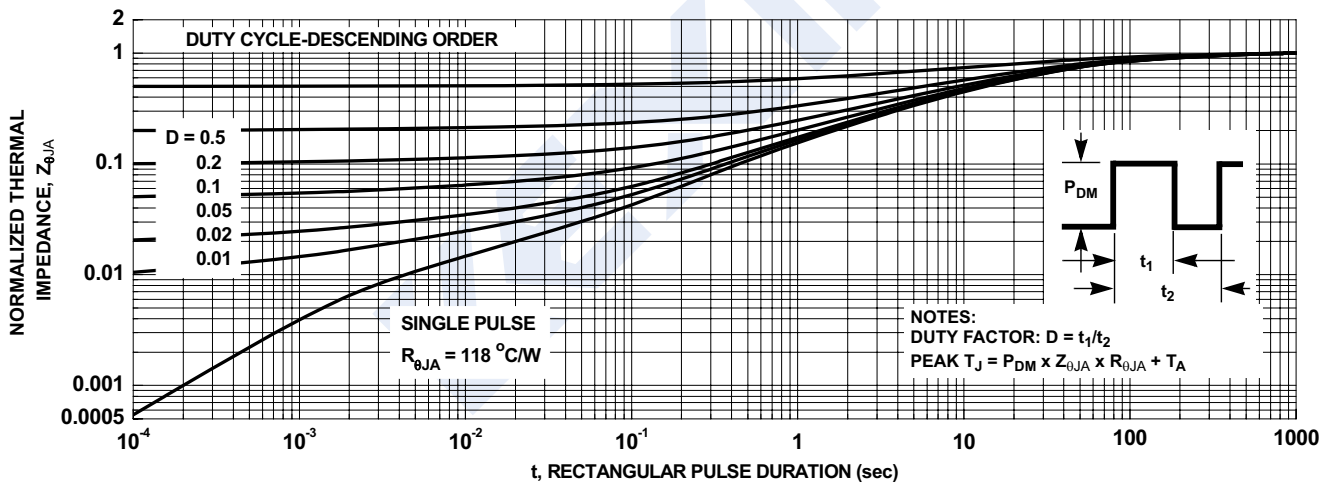


Figure 14. Junction-to-Ambient Transient Thermal Response Curve