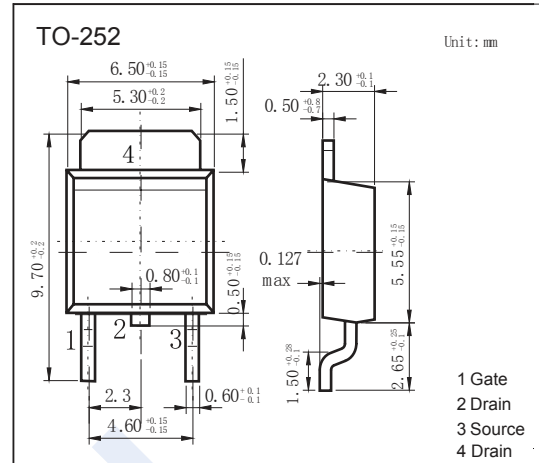
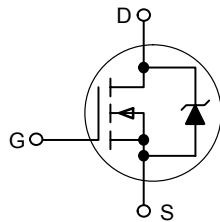


N-Channel MOSFET

NTD6N15

■ Features

- $V_{DS} (V) = 150V$
- $I_D = 6 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 300m\Omega$ ($V_{GS} = 10V$)
- Silicon Gate for Fast Switching Speeds
- Low Drive Requirement



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	150	V
Drain-Gate Voltage ($R_{GS} = 1m\Omega$)		V_{DG}	150	
Gate-Source Voltage		V_{GS}	± 20	
Gate-Source Voltage-Non-Repetitive		V_{GSM}	± 40	
Continuous Drain Current		I_D	6	A
Pulsed Drain Current		I_{DM}	20	
Power Dissipation	$T_c=25^\circ C$	P_D	20	W
Derate above $25^\circ C$			0.16	W/ $^\circ C$
Power Dissipation (Note.1)	$T_a=25^\circ C$	P_D	1.25	W
Derate above $25^\circ C$			0.01	W/ $^\circ C$
Power Dissipation (Note.2)	$T_a=25^\circ C$	P_D	1.75	W
Derate above $25^\circ C$			0.014	W/ $^\circ C$
Thermal Resistance.Junction- to-Ambient	(Note.1)	R_{thJA}	100	$^\circ C/W$
	(Note.2)		71.4	
Thermal Resistance.Junction- to-Case		R_{thJC}	6.25	$^\circ C$
Junction Temperature		T_J	150	
Storage Temperature Range		T_{stg}	-65 to 150	

Note.1: When surface mounted to an FR4 board using the minimum recommended pad size.

Note.2: When surface mounted to an FR4 board using 0.5 sq. in. drain pad size.

N-Channel MOSFET

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	150			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=\text{Rated } V_{DS}$, $V_{GS}=0\text{V}$			10	μA
		$V_{DS}=\text{Rated } V_{DS}$, $V_{GS}=0\text{V}$, $T_J = 25^\circ\text{C}$			100	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=1\text{mA}$	2		4.5	V
		$V_{DS}=V_{GS}$, $I_D=1\text{mA}$, $T_J = 100^\circ\text{C}$	1.5		4	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=3\text{A}$			300	$\text{m}\Omega$
Drain-Source On-Voltage	$V_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=6\text{A}$			1.8	V
		$V_{GS}=10\text{V}$, $I_D=3\text{A}$, $T_J = 100^\circ\text{C}$			1.5	
Forward Transconductance	g_{FS}	$V_{DS}=15\text{V}$, $I_D=3\text{A}$	2.5			S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1\text{MHz}$			1200	pF
Output Capacitance	C_{oss}				500	
Reverse Transfer Capacitance	C_{rss}				120	
Total Gate Charge	Q_g	$V_{GS}=10\text{V}$, $V_{DS}=0.8\text{Rated } V_{DS}$, $I_D=\text{Rated } I_D$			30	nC
Gate Source Charge	Q_{gs}			8		
Gate Drain Charge	Q_{gd}			7		
Turn-On DelayTime	$t_{d(on)}$	$V_{DS}=25\text{V}$, $I_D=3\text{A}$, $R_G=50\Omega$			50	ns
Turn-On Rise Time	t_r				180	
Turn-Off DelayTime	$t_{d(off)}$				200	
Turn-Off Fall Time	t_f				100	
Reverse Recovery Time	t_{rr}	$I_F=6\text{A}$, $dI/dt=25\text{A}/\mu\text{s}$, $V_{GS}=0\text{V}$		325		
Continuous Drain-Source Diode Forward Current	I_S				6	A
Diode Forward Voltage	V_{SD}	$I_S=6\text{A}$, $V_{GS}=0\text{V}$			2	V

■ Typical Characteristics

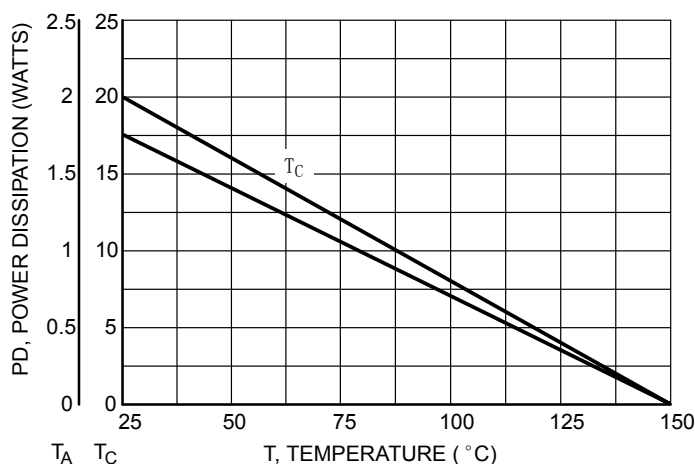


Figure 1. Power Derating

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Typical Characteristics

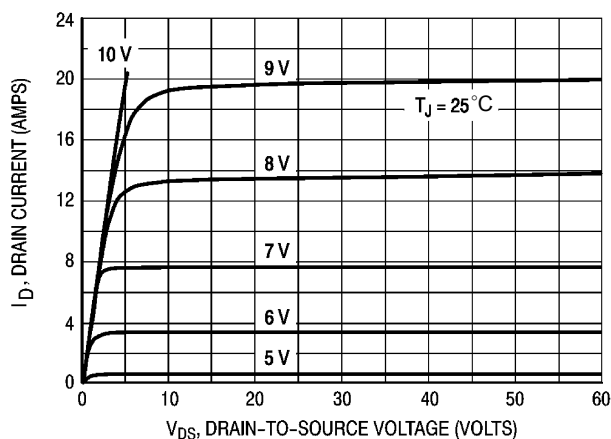


Figure 2. On-Region Characteristics

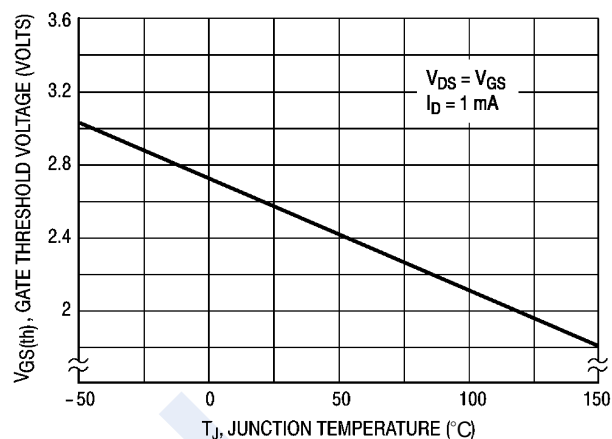


Figure 3. Gate-Threshold Voltage Variation With Temperature

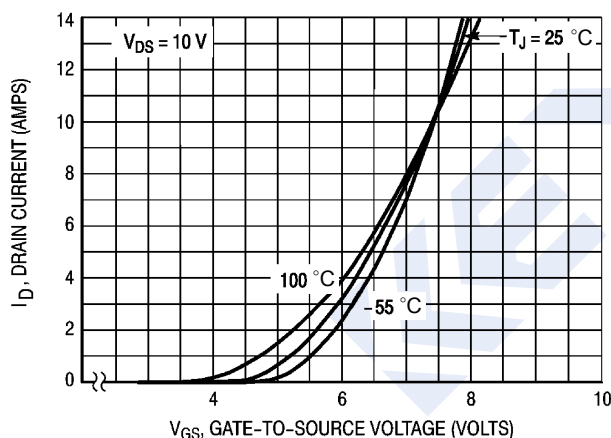


Figure 4. Transfer Characteristics

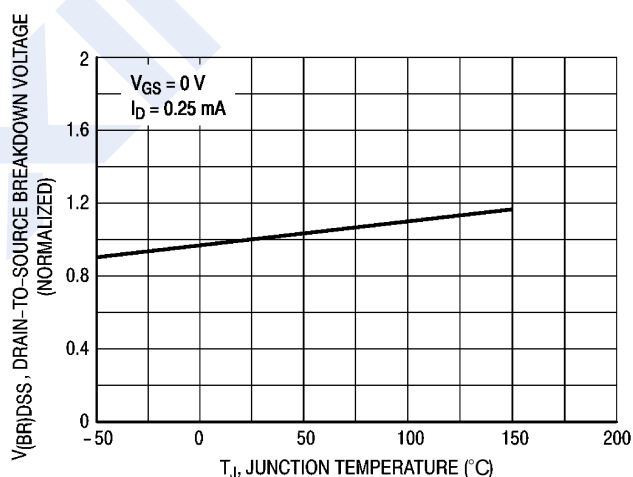


Figure 5. Breakdown Voltage Variation With Temperature

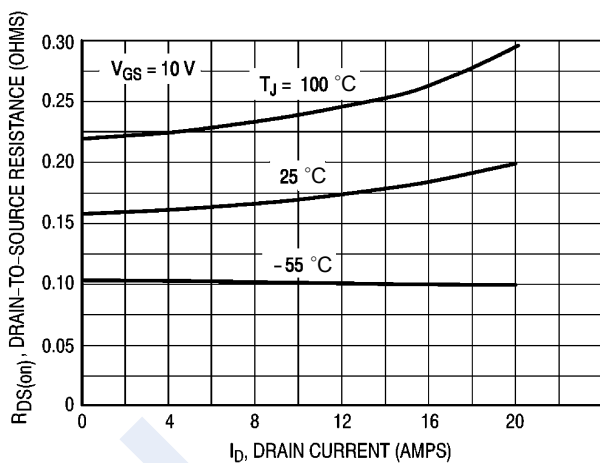


Figure 6. On-Resistance versus Drain Current

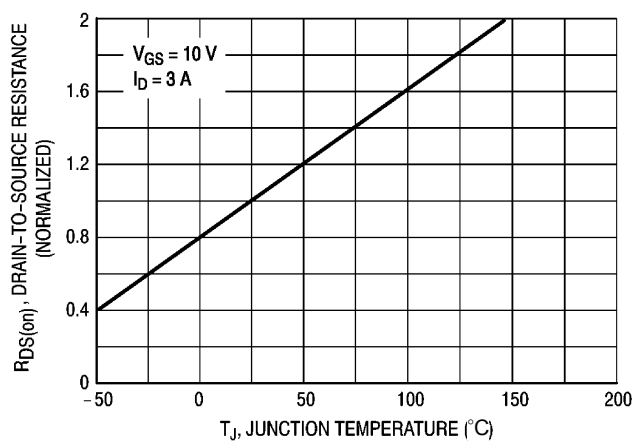


Figure 7. On-Resistance Variation With Temperature

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■ Typical Characteristics

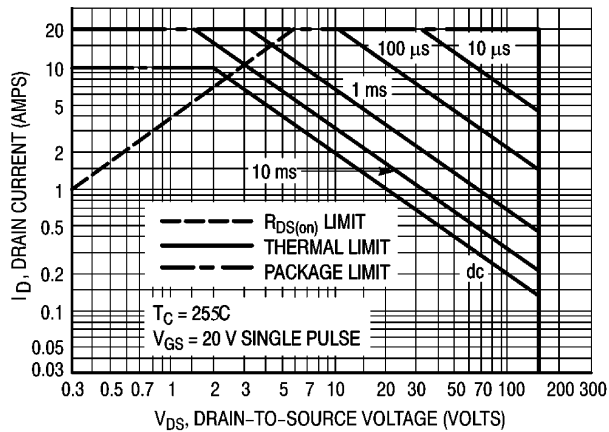


Figure 8. Maximum Rated Forward Biased Safe Operating Area

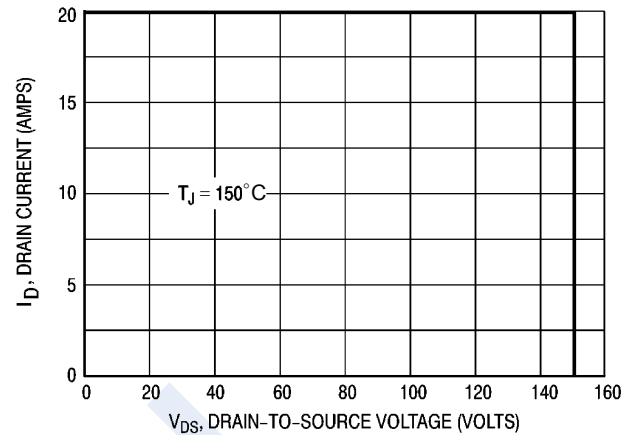


Figure 9. Maximum Rated Switching Safe Operating Area

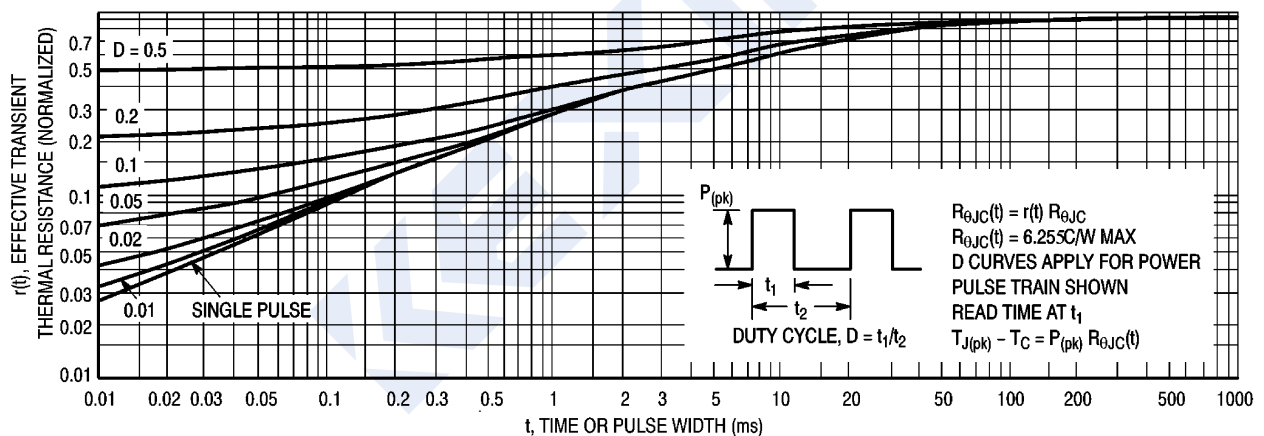


Figure 10. Thermal Response

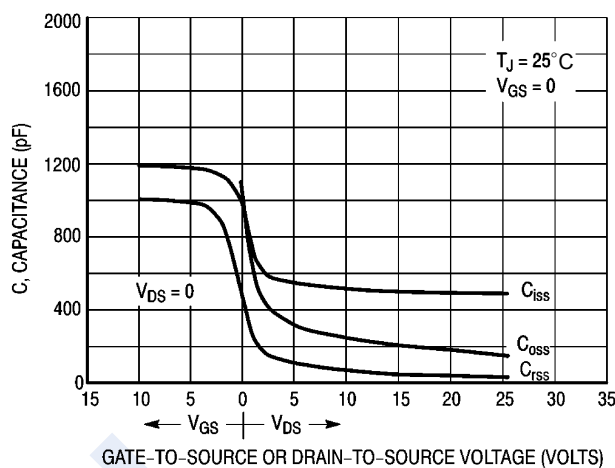


Figure 11. Capacitance Variation

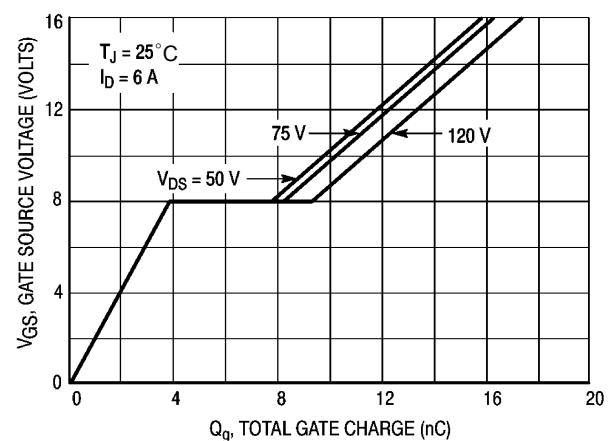


Figure 12. Gate Charge versus Gate-to-Source Voltage

N-Channel MOSFET

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■ Typical Characteristics

RESISTIVE SWITCHING

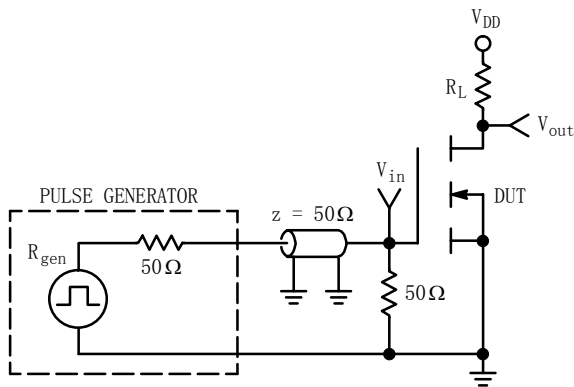


Figure 13. Switching Test Circuit

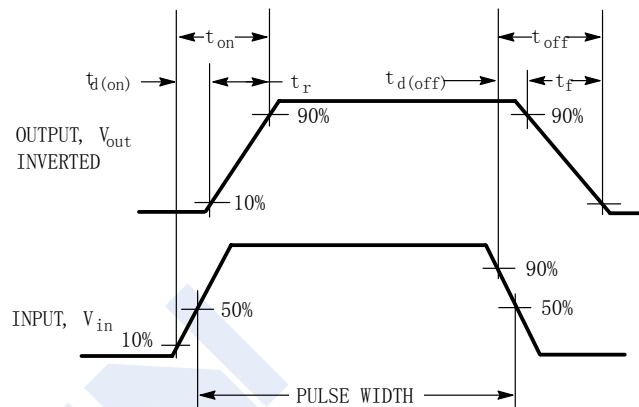


Figure 14. Switching Waveforms