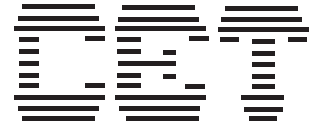


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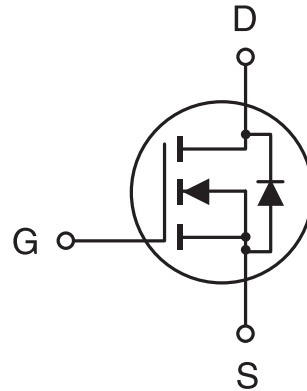
PRELIMINARY

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

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- 200V , 18A , $R_{DS(ON)}=180m\Omega$ @ $V_{GS}=10V$.
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handling capability.
- TO-251 & TO-252 package.



ABSOLUTE MAXIMUM RATINGS (Tc=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	200	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous -Pulsed	I _D	18	A
	I _{DM}	72	A
Drain-Source Diode Forward Current	I _S	18	A
Maximum Power Dissipation @Tc=25°C Derate above 25°C	P _D	50	W
		0.3	W/°C
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to 175	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	R _{θJC}	3	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	°C/W

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ELECTRICAL CHARACTERISTICS (Tc=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	200			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 200V, V _{GS} = 0V			25	μA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
ON CHARACTERISTICS^a						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2		4	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 11A			180	mΩ
On-State Drain Current	I _{D(ON)}	V _{GS} = 10V, V _{DS} = 10V	18			A
Forward Transconductance	g _{FS}	V _{DS} = 50V, I _D = 11A	6.7			S
DYNAMIC CHARACTERISTICS^b						
Input Capacitance	C _{ISS}	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz		1250	1700	pF
Output Capacitance	C _{OSS}			188	250	pF
Reverse Transfer Capacitance	C _{RSS}			60	80	pF
SWITCHING CHARACTERISTICS^b						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 100V, I _D = 11A, V _{GS} = 10V, R _{GEN} = 9.1Ω		16	30	ns
Rise Time	t _r			70	105	ns
Turn-Off Delay Time	t _{D(OFF)}			50	85	ns
Fall time	t _f			55	70	ns
Total Gate Charge	Q _g	V _{DS} = 160V, I _D = 18A, V _{GS} = 10V		64	80	nC
Gate-Source Charge	Q _{gs}			12		nC
Gate-Drain Charge	Q _{gd}			37		nC

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ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^a						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_S = 18\text{A}$			1.5	V

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Notes

- Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

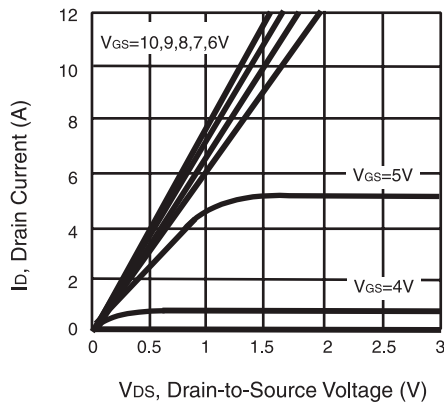


Figure 1. Output Characteristics

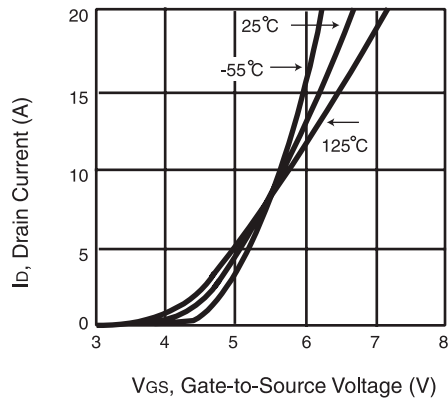


Figure 2. Transfer Characteristics

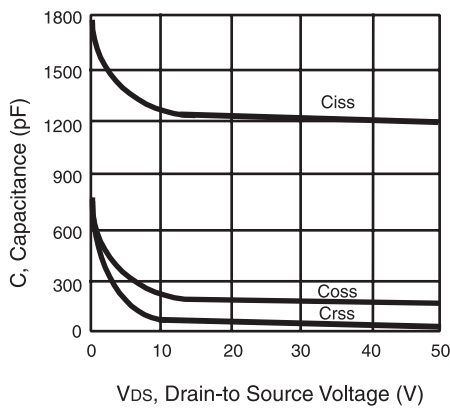


Figure 3. Capacitance

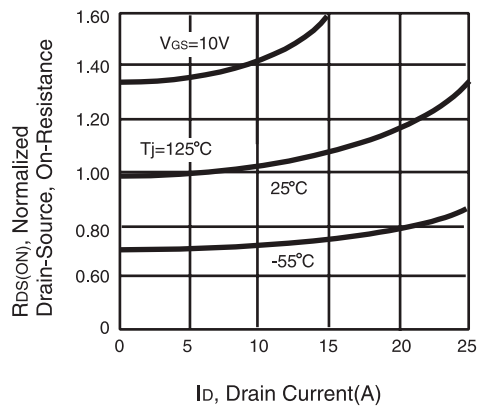
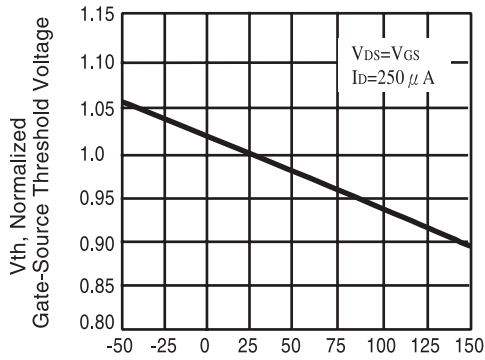


Figure 4. On-Resistance Variation with Drain Current and Temperature

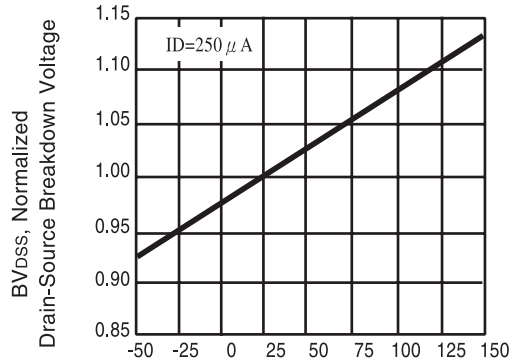
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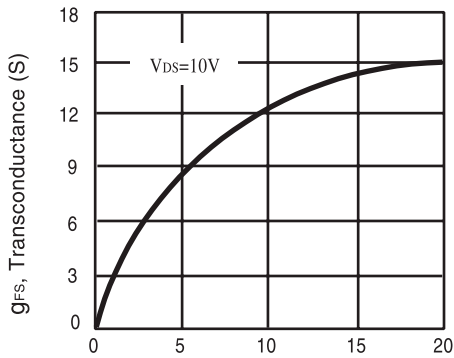
T_J, Junction Temperature (°C)

Figure 5. Gate Threshold Variation with Temperature



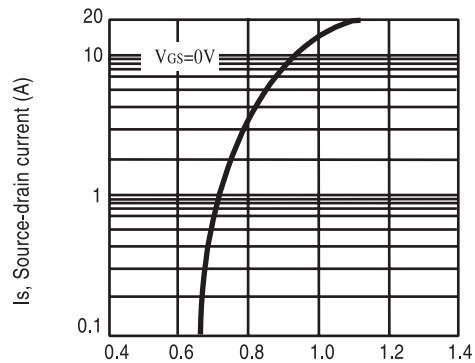
T_J, Junction Temperature (°C)

Figure 6. Breakdown Voltage Variation with Temperature



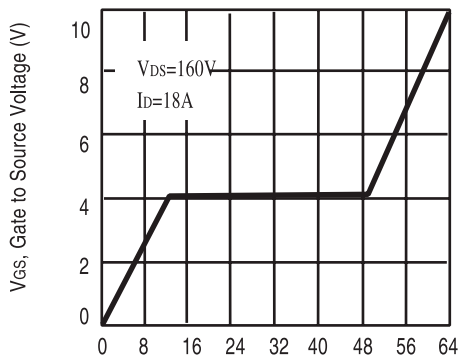
ID, Drain-Source Current (A)

Figure 7. Transconductance Variation with Drain Current



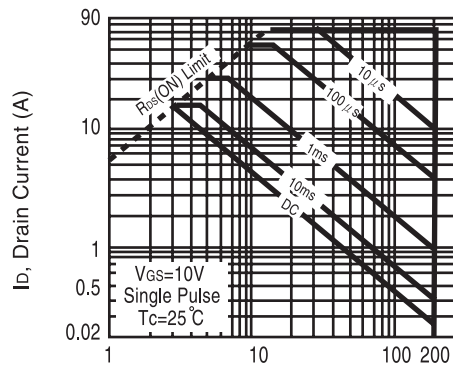
V_{SD}, Body Diode Forward Voltage (V)

Figure 8. Body Diode Forward Voltage Variation with Source Current



Q_g, Total Gate Charge (nC)

Figure 9. Gate Charge



V_{DS}, Drain-Source Voltage (V)

Figure 10. Maximum Safe Operating Area

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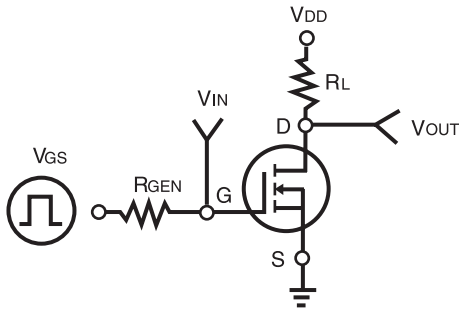


Figure 11. Switching Test Circuit

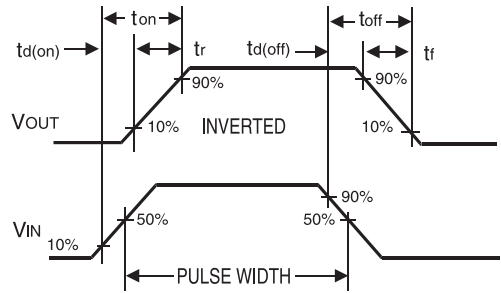


Figure 12. Switching Waveforms

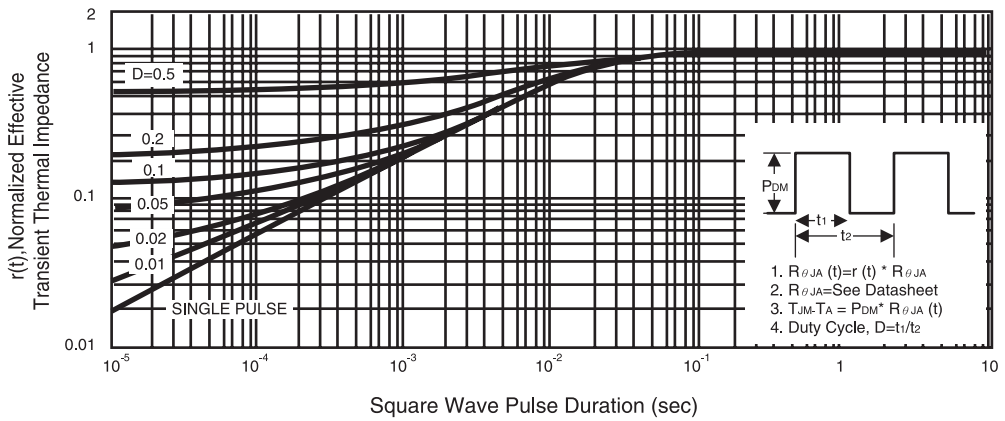


Figure 13. Normalized Thermal Transient Impedance Curve