



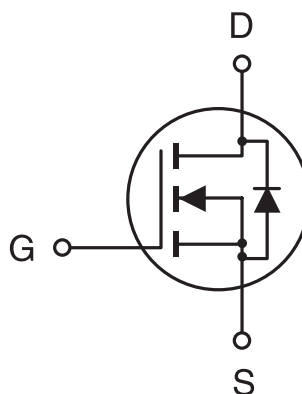
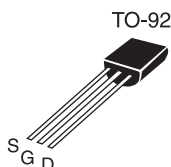
CEK7000

March 1998

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- 60V , 0.2A , $R_{DS(ON)}=5\Omega$ @ $V_{GS}=10V$.
 $R_{DS(ON)}=5.3\Omega$ @ $V_{GS}=4.5V$.
- High dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- TO-92 Package.



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ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous ^a @ $T_J=125^\circ C$ -Pulsed ^b	I _D	200	mA
	I _{DM}	500	mA
Drain-Source Diode Forward Current ^a	I _S	280	mA
Maximum Power Dissipation ^a	P _D	400	mW
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	313	°C/W
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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =10μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±15V, V _{DS} =0V			±10	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 1mA	0.8		3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =500mA			5	Ω
		V _{GS} =4.5V, I _D =75mA			5.3	Ω
On-State Drain Current	I _{D(ON)}	V _{DS} =10V, V _{GS} =4.5V	75			mA
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =200mA	100			mS
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz		40	50	pF
Output Capacitance	C _{OSS}			20	25	pF
Reverse Transfer Capacitance	C _{RSS}			3	5	pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _D = 15V, I _D = 200mA, V _{GEN} = 10V, R _{GEN} = 25Ω		8	10	ns
Rise Time	t _r			15	20	ns
Turn-Off Delay Time	t _{D(OFF)}			7	10	ns
Fall time	t _f			15	20	ns

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

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_s = 400mA$			1.2	V

Notes

- a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.
- b. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.
- c. Guaranteed by design, not subject to production testing.

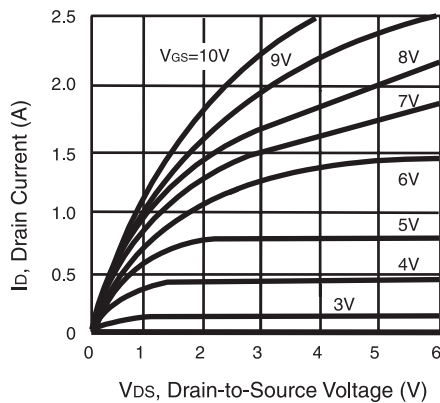


Figure 1. Output Characteristics

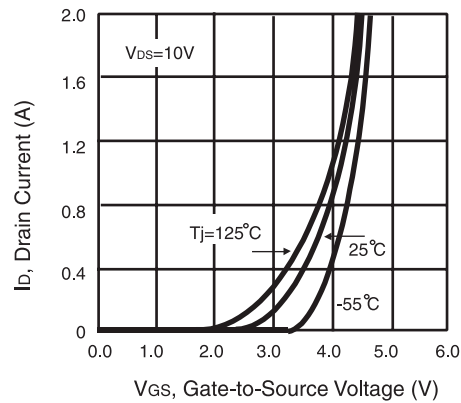


Figure 2. Transfer Characteristics

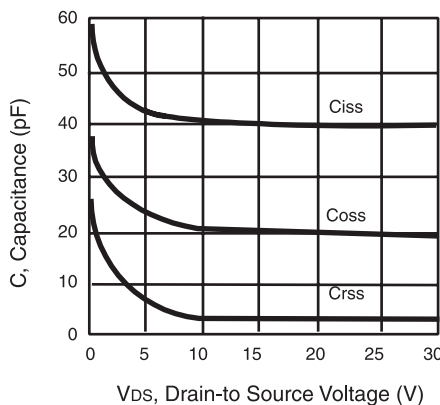


Figure 3. Capacitance

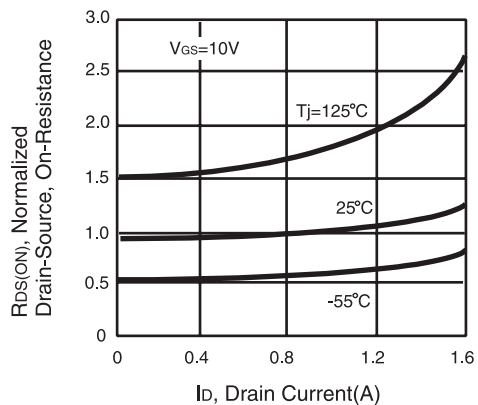


Figure 4. On-Resistance Variation with Drain Current and Temperature

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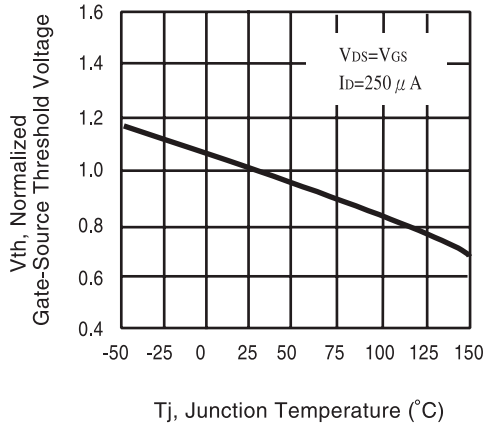


Figure 5. Gate Threshold Variation with Temperature

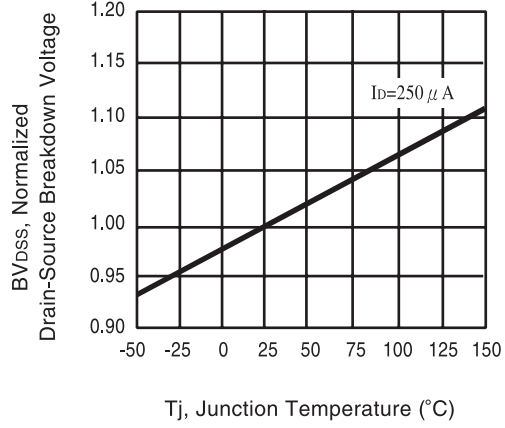


Figure 6. Breakdown Voltage Variation with Temperature

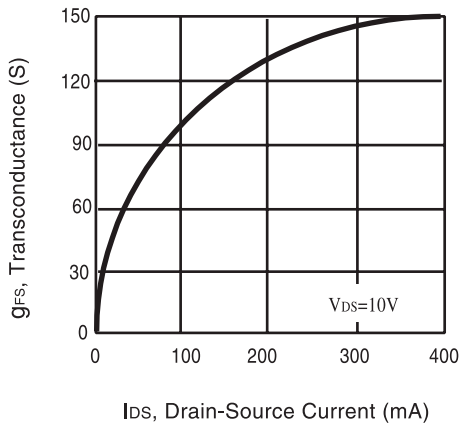


Figure 7. Transconductance Variation with Drain Current

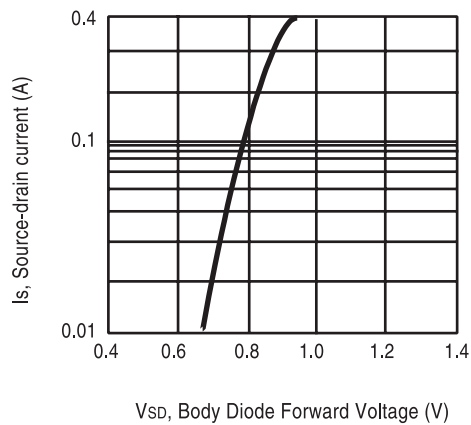


Figure 8. Body Diode Forward Voltage Variation with Source Current

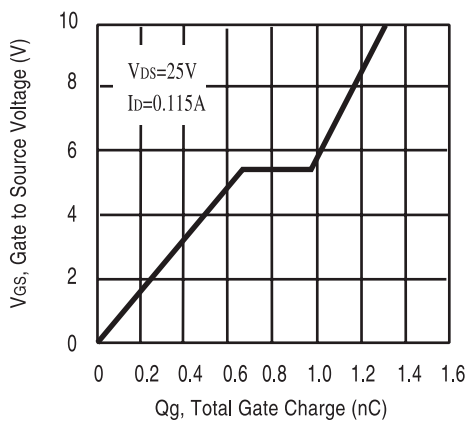


Figure 9. Gate Charge

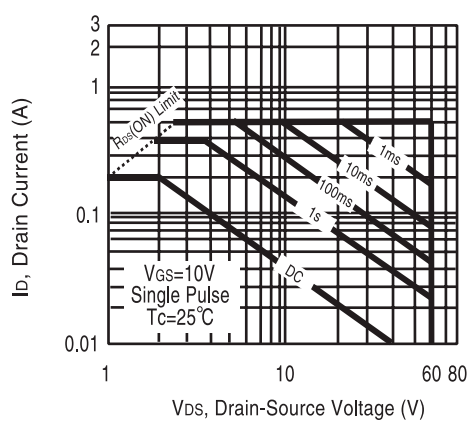


Figure 10. Maximum Safe Operating Area

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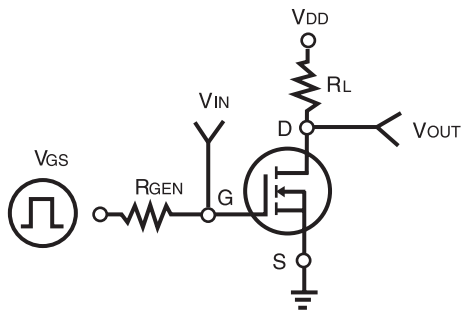


Figure 11. Switching Test Circuit

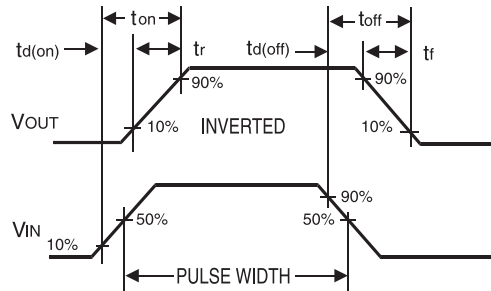


Figure 12. Switching Waveforms

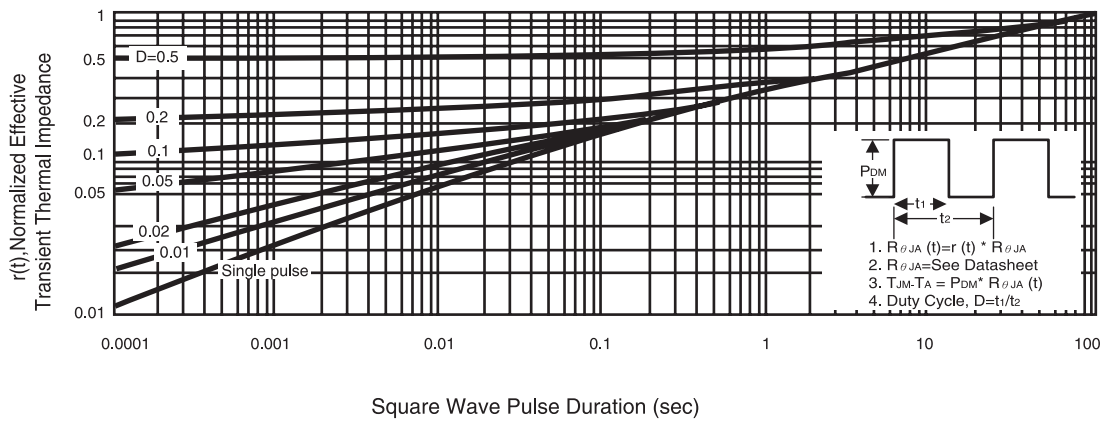


Figure 13. Normalized Thermal Transient Impedance Curve