



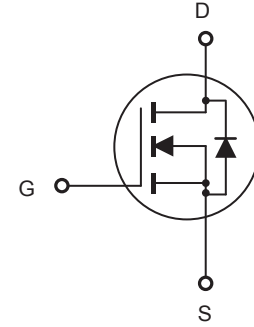
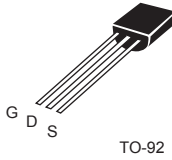
CEK7002A

N-Channel Enhancement Mode Field Effect Transistor

PRELIMINARY

FEATURES

- 60V, 0.3A, $R_{DS(ON)} = 6 \Omega @V_{GS} = 10V$.
 $R_{DS(ON)} = 6 \Omega @V_{GS} = 5V$.
- High dense cell design for extremely low $R_{DS(ON)}$.
- Rugged and reliable.
- Lead free product is acquired.
- TO-92 package.



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

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	0.3	A
Drain Current-Pulsed ^a	I_{DM}	1.2	A
Maximum Power Dissipation	P_D	1.5	W
Operating and Store Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Ambient ^b	$R_{\theta JA}$	85	$^\circ C/W$

This is preliminary information on a new product in development now .
Details are subject to change without notice .

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<http://www.cetsemi.com>



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Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate Body Leakage Current, Forward	I_{GSSF}	$V_{GS} = 20V, V_{DS} = 0V$			100	nA
Gate Body Leakage Current, Reverse	I_{GSSR}	$V_{GS} = -20V, V_{DS} = 0V$			-100	nA
On Characteristics ^c						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1		3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.5A$		1.7	6	Ω
		$V_{GS} = 5V, I_D = 0.05A$		1.9	6	Ω
Dynamic Characteristics ^d						
Input Capacitance	C_{iss}	$V_{DS} = 5V, V_{GS} = 0V, f = 1.0\text{ MHz}$		45		pF
Output Capacitance	C_{oss}			50		pF
Reverse Transfer Capacitance	C_{rss}			20		pF
Switching Characteristics ^d						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 25V, I_D = 0.5A, V_{GS} = 10V, R_{GEN} = 10\Omega$		5.7	11.4	ns
Turn-On Rise Time	t_r			3.3	6.6	ns
Turn-Off Delay Time	$t_{d(off)}$			13.3	26.6	ns
Turn-Off Fall Time	t_f	$V_{DS} = 48V, I_D = 0.5A, V_{GS} = 5V$		5.3	10.6	ns
Total Gate Charge	Q_g			0.86	0.98	nC
Gate-Source Charge	Q_{gs}			0.16		nC
Gate-Drain Charge	Q_{gd}			0.5		nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Current ^b	I_S				0.3	A
Drain-Source Diode Forward Voltage ^c	V_{SD}	$V_{GS} = 0V, I_S = 0.2A$			1.2	V
Notes : <input type="checkbox"/> a. Repetitive Rating : Pulse width limited by maximum junction temperature. <input type="checkbox"/> b. Surface Mounted on FR4 Board, $t \leq 10\text{ sec.}$ <input type="checkbox"/> c. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$. <input type="checkbox"/> d. Guaranteed by design, not subject to production testing. <input type="checkbox"/> <input type="checkbox"/>						



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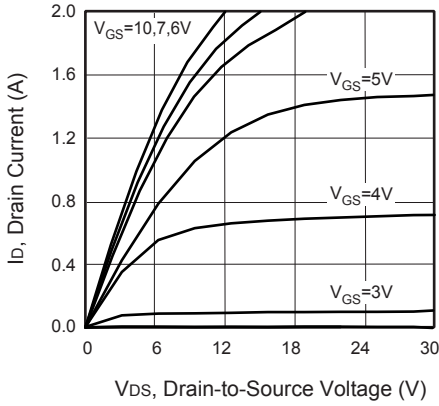


Figure 1. Output Characteristics

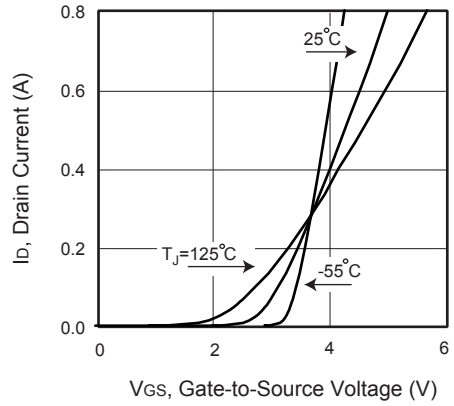


Figure 2. Transfer Characteristics

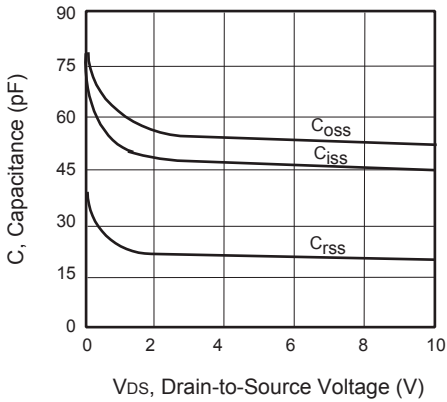


Figure 3. Capacitance

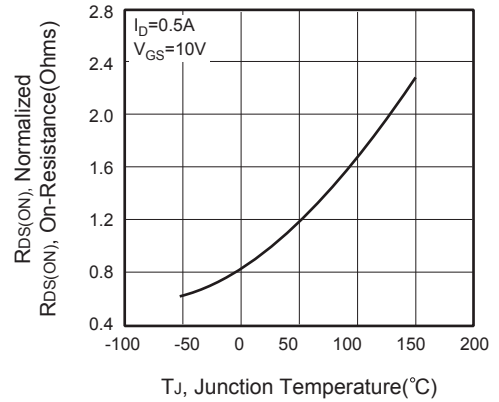


Figure 4. On-Resistance Variation with Temperature



Figure 5. Gate Threshold Variation with Temperature

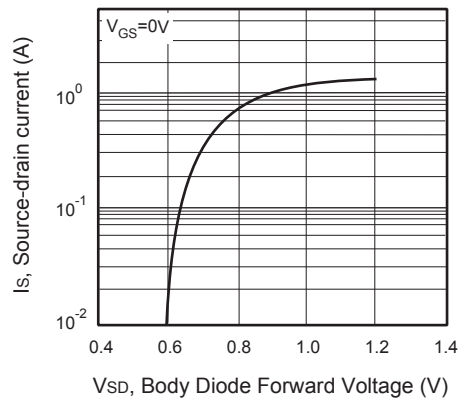


Figure 6. Body Diode Forward Voltage Variation with Source Current



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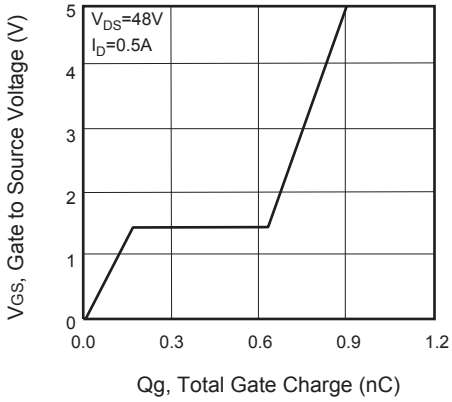


Figure 7. Gate Charge

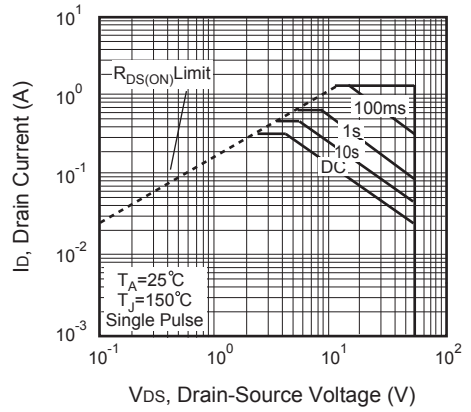


Figure 8. Maximum Safe Operating Area



Figure 9. Switching Test Circuit



Figure 10. Switching Waveforms

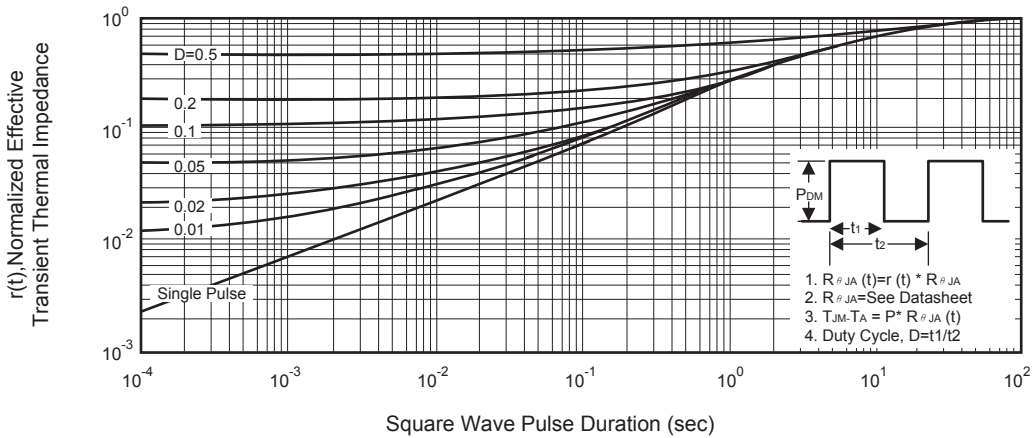


Figure 11. Normalized Thermal Transient Impedance Curve