



CEM9435A

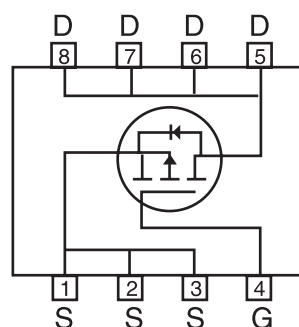
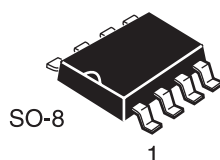
March 1998

P-Channel Enhancement Mode MOSFET

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FEATURES

- -30V , -5.3A , $R_{DS(ON)}=50m\Omega$ @ $V_{GS}=-10V$.
 $R_{DS(ON)}=90m\Omega$ @ $V_{GS}=-4.5V$.
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handing capability.
- Surface Mount Package.



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ^a @ $T_J=125^\circ\text{C}$ -Pulsed ^b	I_D	± 5.3	A
	I_{DM}	± 20	A
Drain-Source Diode Forward Current ^a	I_S	-1.9	A
Maximum Power Dissipation ^a	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	$R_{\theta JA}$	50	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

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Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, ID=-250μA	-30			V
Zero Gate Voltage Drain Current	IDSS	VDS=-24V, VGS=0V			-1	μA
Gate-Body Leakage	IGSS	VGS=±20V, VDS=0V			±100	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID = -250μA	-1		-3	V
Drain-Source On-State Resistance	RDS(ON)	VGS = -10V, ID = -5.3A		40	50	mΩ
		VGS = -4.5V, ID = -4.2A		67	90	mΩ
On-State Drain Current	ID(ON)	VDS = -5V, VGS = -10V	-20			A
Forward Transconductance	gFS	VDS = -15V, ID = - 5.3A	4	8.3		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	CISS	VDS=-15V, VGS = 0V f = 1.0MHz		860	1120	pF
Output Capacitance	COSS			458	600	pF
Reverse Transfer Capacitance	CRSS			140	190	pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	tD(ON)	VD = -15V, ID = -1A, VGEN = - 10V, RGEN = 6Ω		9	30	ns
Rise Time	tr			16	60	ns
Turn-Off Delay Time	tD(OFF)			75	120	ns
Fall Time	tf			40	100	ns
Total Gate Charge	Qg	VDS = -15V, ID = -5.3A, VGS = -10V		29	40	nC
Gate-Source Charge	Qgs			3		nC
Gate-Drain Charge	Qgd			9		nC

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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}	$V_{GS} = 0V, I_S = -5.3A$		-0.84	-1.3	V

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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.

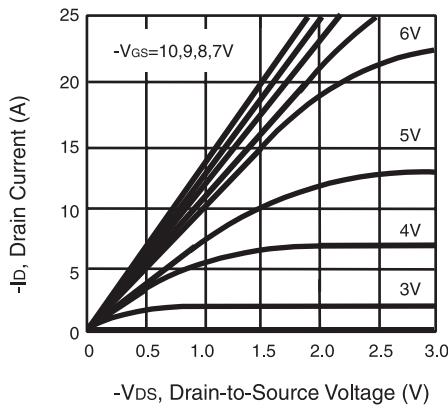


Figure 1. Output Characteristics

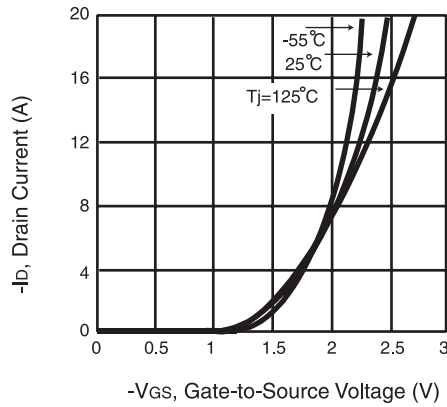


Figure 2. Transfer Characteristics

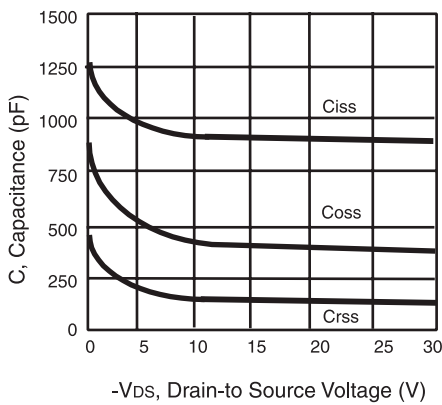


Figure 3. Capacitance

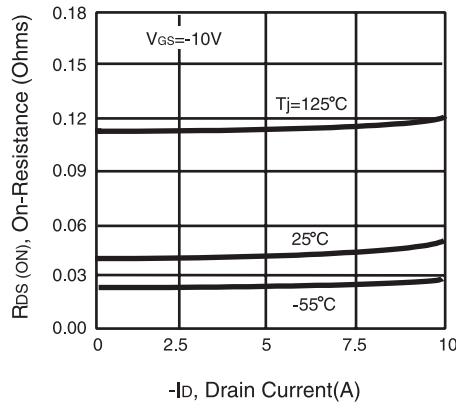


Figure 4. On-Resistance Variation with Drain Current and Temperature

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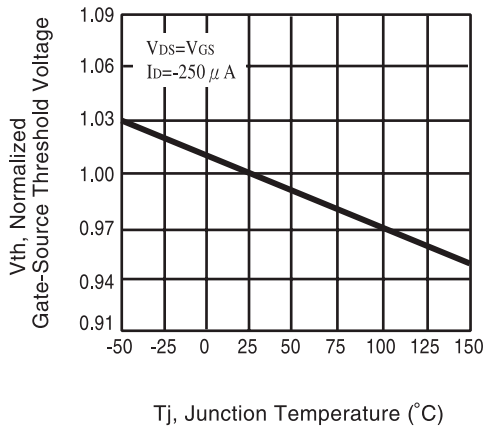


Figure 5. Gate Threshold Variation with Temperature

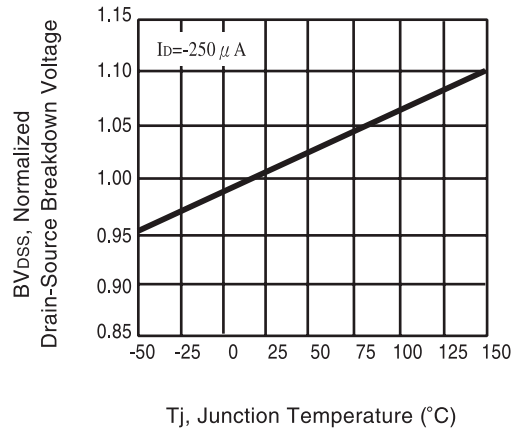


Figure 6. Breakdown Voltage Variation with Temperature

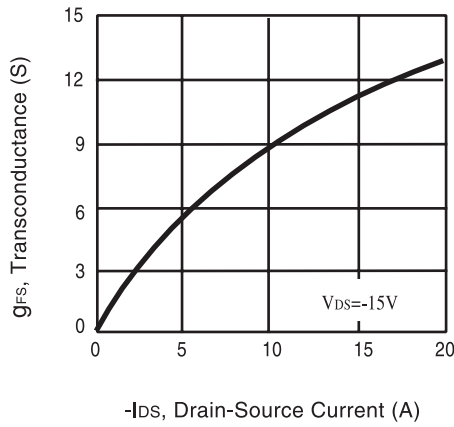


Figure 7. Transconductance Variation with Drain Current

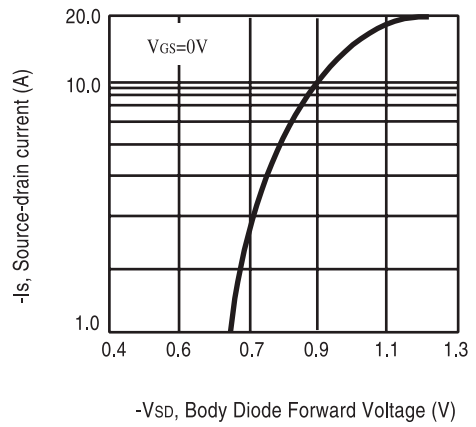


Figure 8. Body Diode Forward Voltage Variation with Source Current

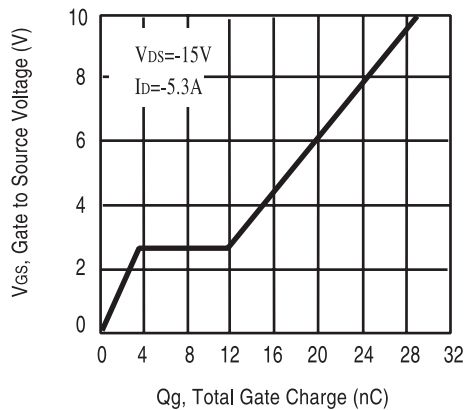


Figure 9. Gate Charge

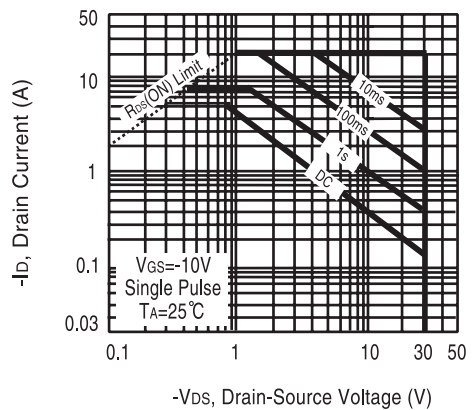


Figure 10. Maximum Safe Operating Area

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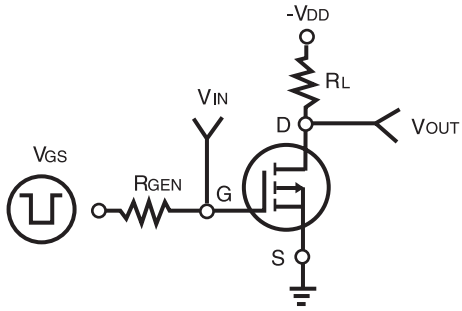


Figure 11. Switching Test Circuit

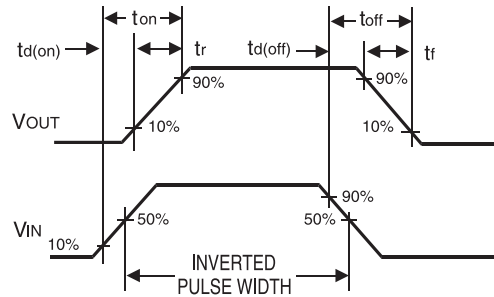


Figure 12. Switching Waveforms

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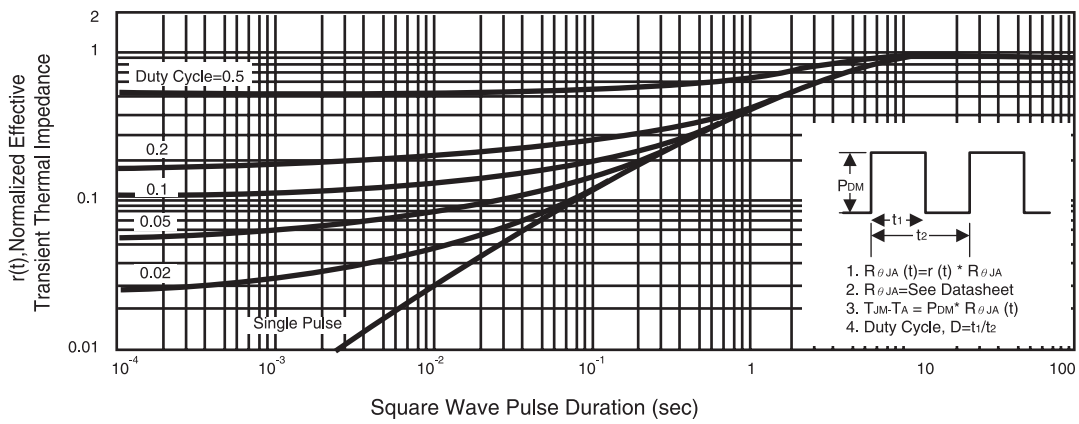


Figure 13. Normalized Thermal Transient Impedance Curve

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