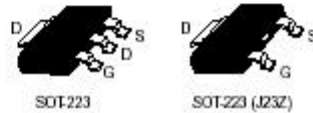
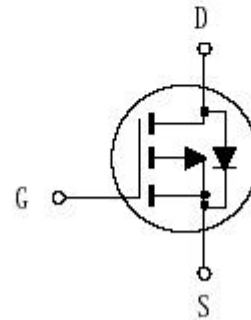


## P-Channel Enhancement Mode MOSFET

8

### FEATURES

- ◆  $-30V$ ,  $-5.3A$ ,  $R_{DS(on)}=60m\Omega$  @ $V_{GS}=-10V$ ,  
 $R_{DS(on)}=120m\Omega$  @ $V_{GS}=-4.5V$ .
- ◆ Super high dense cell design for extremely low  $R_{DS(on)}$ .
- ◆ High power and current handling capability.
- ◆ Surface Mount Package.



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

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

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient <sup>a</sup>	$R_{\theta JA}$	50	$^{\circ}C/W$
--	-----------------	----	---------------

# CET9435A

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$V_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -24V, V_{GS} = 0V$			-1	$\mu A$
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = \pm 20V, V_{GS} = 0V$			$\pm 100$	nA
<b>ON CHARACTERISTICS<sup>b</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1		-3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -5.3A$			60	m $\Omega$
		$V_{GS} = -4.5V, I_D = -4.2A$			120	m $\Omega$
On-State Drain Current	$I_{D(on)}$	$V_{DS} = -5V, V_{GS} = -10V$	-20			A
Forward Transconductance	$g_{FS}$	$V_{DS} = -15V, I_D = -5.3A$	4	8.3		S
<b>DYNAMIC CHARACTERISTICS<sup>c</sup></b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1.0MHz$		1040		pF
Output Capacitance	$C_{OSS}$			420		pF
Reverse Transfer Capacitance	$C_{RSS}$			150		pF
<b>SWITCHING CHARACTERISTICS<sup>c</sup></b>						
Turn-On Delay Time	$t_{D(on)}$	$V_D = -15V,$ $I_D = -1A,$ $V_{CEM} = -10V,$ $R_{CEM} = 6\Omega$		9	30	ns
Rise Time	$t_r$			16	60	ns
Turn-Off Delay Time	$t_{D(off)}$			75	120	ns
Fall Time	$t_f$			40	100	ns
Total Gate Charge	$Q_g$	$V_{DS} = -15V, I_D = -5.3A,$ $V_{GS} = -10V$		22.5	29	nC
Gate-Source Charge	$Q_{gs}$			2		nC
Gate-Drain Charge	$Q_{gd}$			6		nC

# CET9435A

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

8

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
<b>DRAIN-SOURCE DIODE CHARACTERISTICS<sup>b</sup></b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = -5.3A$		-0.84	-1.3	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.

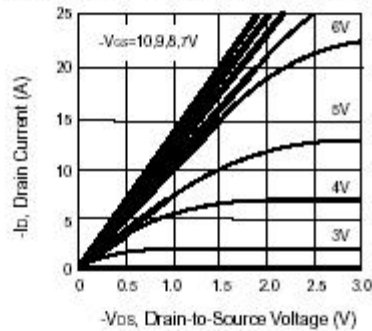


Figure 1. Output Characteristics

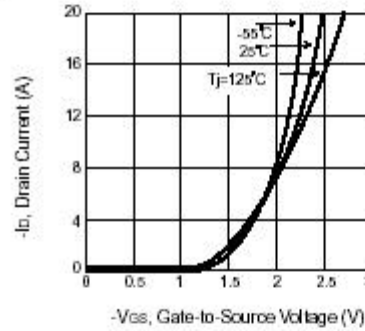


Figure 2. Transfer Characteristics

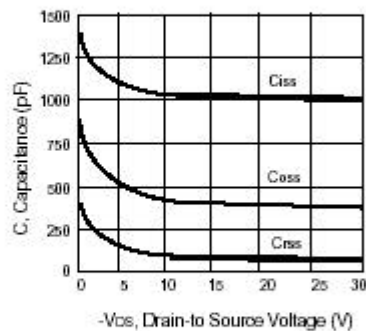


Figure 3. Capacitance

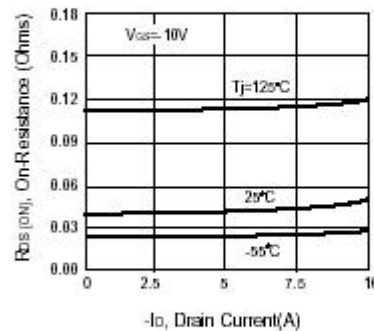
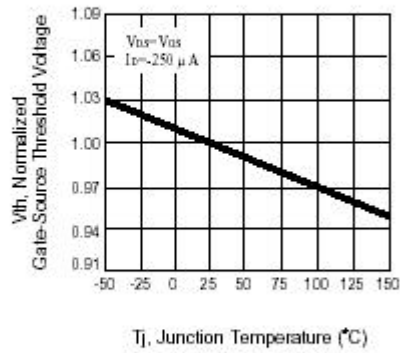


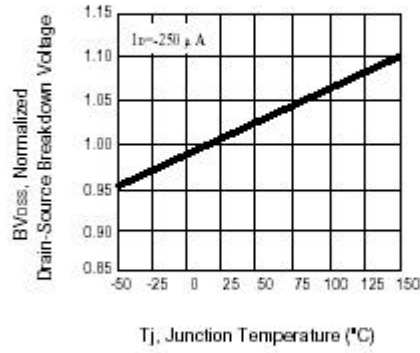
Figure 4. On-Resistance Variation with Drain Current and Temperature

# CET9435A

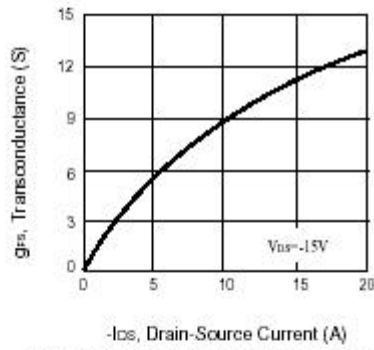
8



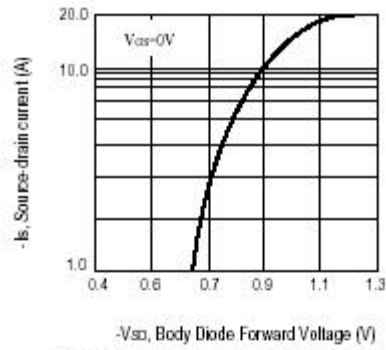
**Figure 5. Gate Threshold Variation with Temperature**



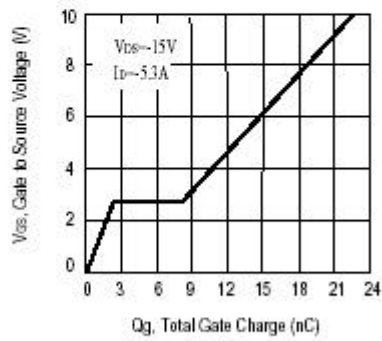
**Figure 6. Breakdown Voltage Variation with Temperature**



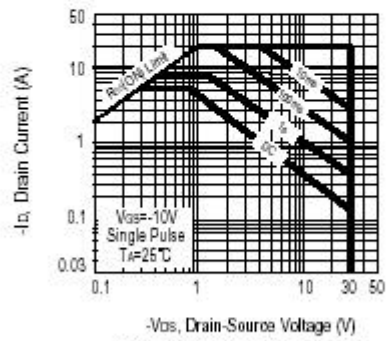
**Figure 7. Transconductance Variation with Drain Current**



**Figure 8. Body Diode Forward Voltage Variation with Source Current**



**Figure 9. Gate Charge**



**Figure 10. Maximum Safe Operating Area**

# CET9435A

8

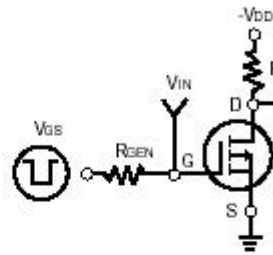


Figure 11. Switching Test Circuit

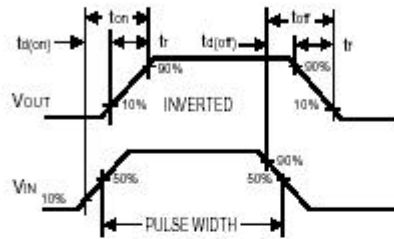


Figure 12. Switching Waveforms

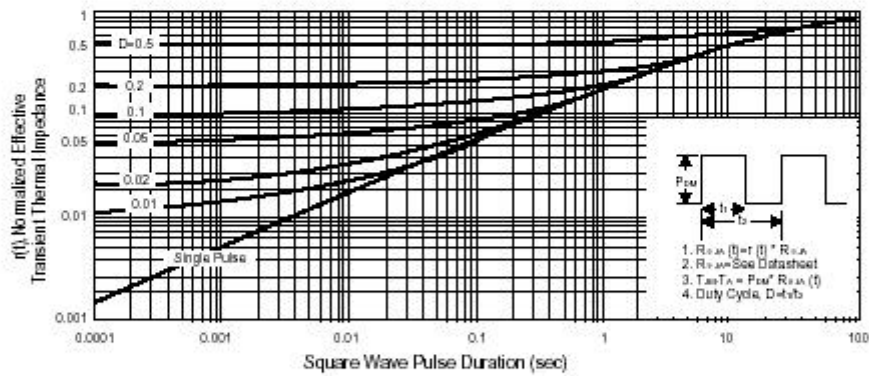


Figure 13. Normalized Thermal Transient Impedance Curve

