

RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

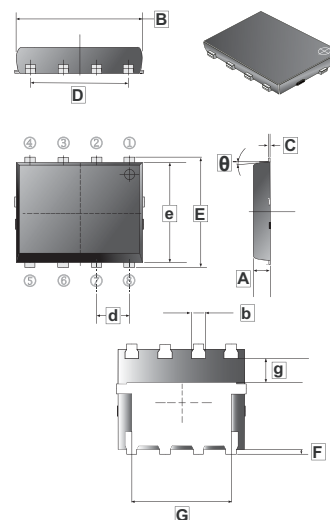
## DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low  $R_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

## FEATURES

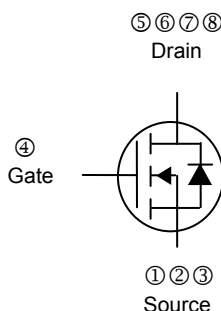
- Low  $R_{DS(on)}$  provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOP-8PP saves board space.
- Fast switching speed.
- High performance trench technology.

## SOP-8PP



## PRODUCT SUMMARY

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$V_{DS}(V)$	$R_{DS(on)}$ (m $\Omega$ )	$I_D(A)$
40	9@ $V_{GS}=10V$	20
	12@ $V_{GS}=4.5V$	17



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.00	1.10	$\theta$	0°	12°
B	5.70	5.80	b	0.33	0.51
C	0.20	0.30	d	1.27BSC	
D	3.61	3.98	e	1.35	1.75
E	5.40	6.10	g	1.10	-
F	0.08	0.20			
G	3.60	3.99			

## ABSOLUTE MAXIMUM RATINGS AND THERMAL DATA ( $T_A = 25^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	20	V
Continuous Drain Current <sup>A</sup>	$I_D$	$T_A=25^\circ C$	20
		$T_A=70^\circ C$	16
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	50	A
Continuous Source Current (Diode Conduction) <sup>A</sup>	$I_S$	2.3	A
Power Dissipation <sup>A</sup>	$P_D$	$T_A=25^\circ C$	5.0
		$T_A=70^\circ C$	3.2
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 ~ 150	$^\circ C$
THERMAL RESISTANCE DATA			
Maximum Junction to Ambient <sup>A</sup>	$R_{\theta JA}$	$t \leq 10$ sec	25
		Steady-State	65

### Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	-	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS} = 0\text{V}, V_{GS} = 20\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS} = 32\text{V}, V_{GS} = 0\text{V}$
		-	-	25		$V_{DS} = 32\text{V}, V_{GS} = 0\text{V}, T_J=55^\circ\text{C}$
On-State Drain Current <sup>A</sup>	$I_{D(ON)}$	34	-	-	A	$V_{DS} = 5\text{V}, V_{GS} = 10\text{V}$
Drain-Source On-Resistance <sup>A</sup>	$R_{DS(ON)}$	-	-	9	m $\Omega$	$V_{GS} = 10\text{V}, I_D = 7.5\text{A}$
		-	-	12		$V_{GS} = 4.5\text{V}, I_D = 7\text{A}$
Forward Transconductance <sup>A</sup>	$g_{FS}$	-	22	-	S	$V_{DS} = 15\text{V}, I_D = 7.5\text{A}$
Diode Forward Voltage	$V_{SD}$	-	1.1	-	V	$I_S = 2.1\text{A}, V_{GS} = 0\text{V}$
<b>Dynamic <sup>b</sup></b>						
Total Gate Charge	$Q_g$	-	4.0	-	nC	$I_D = 7.5\text{A}$
Gate-Source Charge	$Q_{gs}$	-	1.1	-		$V_{DS} = 15\text{V}$
Gate-Drain Charge	$Q_{gd}$	-	1.4	-		$V_{GS} = 4.5\text{V}$
Turn-On Delay Time	$T_{d(ON)}$	-	16	-	nS	$I_D = 34\text{A}, V_{DD} = 25\text{V}$ $V_{GEN} = 10\text{V}$ $R_L = 25\Omega$
Rise Time	$T_r$	-	5	-		
Turn-Off Delay Time	$T_{d(OFF)}$	-	23	-		
Fall Time	$T_f$	-	3	-		

**Notes**

- a. Pulse test :  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
- b. Guaranteed by design, not subject to production testing.