

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

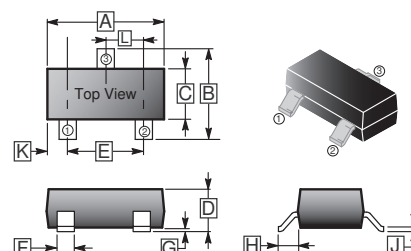
DESCRIPTION

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 SC-59 saves board space.
- Fast switching speed.
- High performance trench technology.

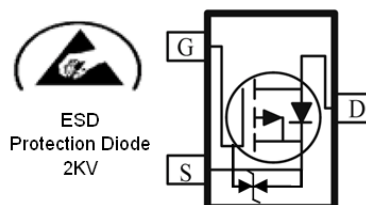
SC-59



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.25	3.00	H	0.40	REF.
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7' inch



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ¹	I_D	$T_A = 25^\circ\text{C}$	A
		$T_A = 70^\circ\text{C}$	
Pulsed Drain Current ²	I_{DM}	-20	A
Continuous Source Current (Diode Conduction) ¹	I_S	-1.9	A
Power Dissipation ¹	P_D	$T_A = 25^\circ\text{C}$	W
		$T_A = 70^\circ\text{C}$	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$
Thermal Resistance Data			
Maximum Junction to Ambient ¹	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	$^\circ\text{C/W}$
	Steady-State		

Notes:

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

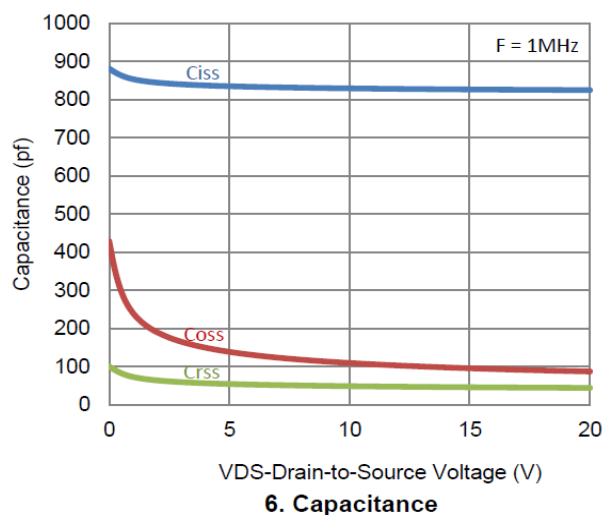
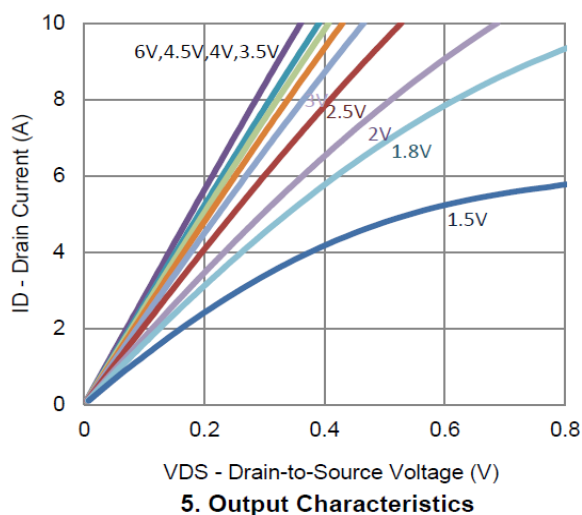
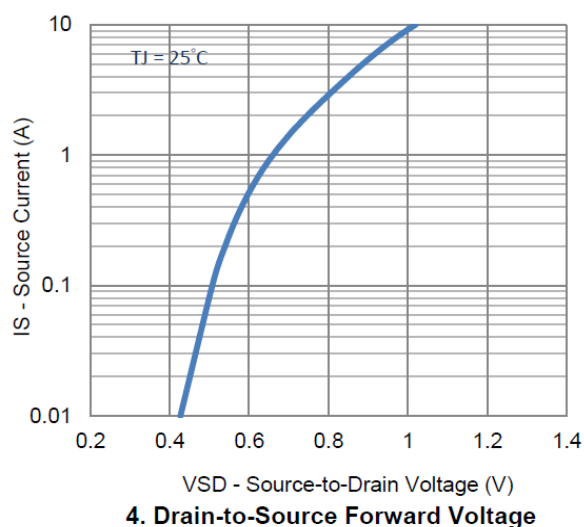
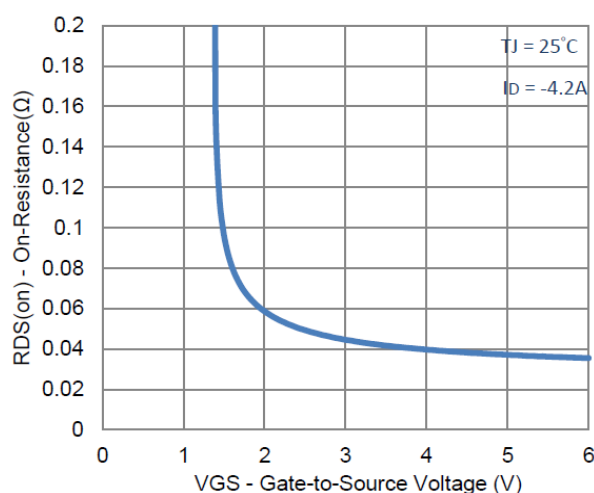
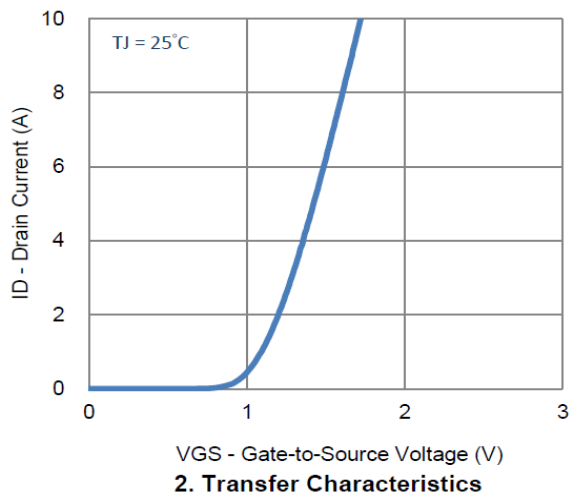
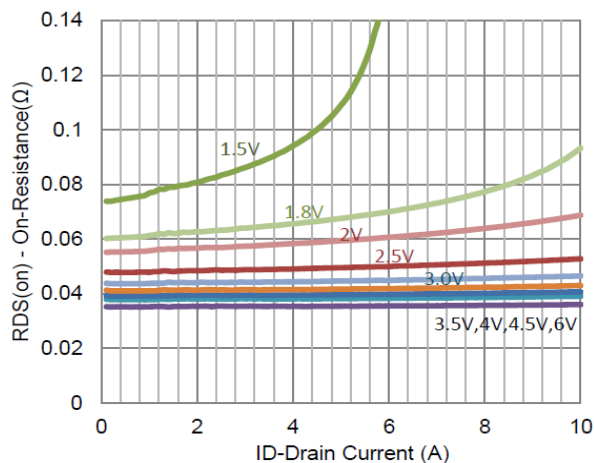
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-0.3	-0.55	-	V	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 10	μA	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 10\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -16\text{V}$, $V_{GS} = 0\text{V}$
		-	-	-10		$V_{DS} = -16\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(ON)}$	-10	-	-	A	$V_{DS} = -5\text{V}$, $V_{GS} = -4.5\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	31	mΩ	$V_{GS} = -4.5\text{V}$, $I_D = -4.2\text{A}$
		-	-	44		$V_{GS} = -2.5\text{V}$, $I_D = -3.5\text{A}$
		-	-	56		$V_{GS} = -1.8\text{V}$, $I_D = -3.1\text{A}$
		-	-	83		$V_{GS} = -1.5\text{V}$, $I_D = -2.6\text{A}$
Forward Transconductance ¹	g_{FS}	-	20	-	S	$V_{DS} = -10\text{V}$, $I_D = -4.2\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.7	-	V	$I_S = -0.95\text{A}$, $V_{GS} = 0$
Dynamic ²						
Input Capacitance	C_{iss}	-	826	-	pF	$V_{DS} = -15\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$
Output Capacitance	C_{oss}	-	96	-		
Reverse Transfer Capacitance	C_{rss}	-	46	-		
Total Gate Charge	Q_g	-	18	-	nC	$I_D = -4.2\text{A}$ $V_{DS} = -10\text{V}$ $V_{GS} = -4.5\text{V}$
Gate-Source Charge	Q_{gs}	-	4.8	-		
Gate-Drain Charge	Q_{gd}	-	3.1	-		
Turn-On Delay Time	$T_{d(ON)}$	-	81	-	nS	$I_D = -4.2\text{A}$, $R_L = 2.4\Omega$ $V_{DS} = -10\text{V}$ $V_{GEN} = -4.5\text{V}$ $R_{GEN} = 6\Omega$
Rise Time	T_r	-	163	-		
Turn-Off Delay Time	$T_{d(OFF)}$	-	785	-		
Fall Time	T_f	-	397	-		

Notes:

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

CHARACTERISTIC CURVE



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