

P-Channel Enhancement Mode MOSFET

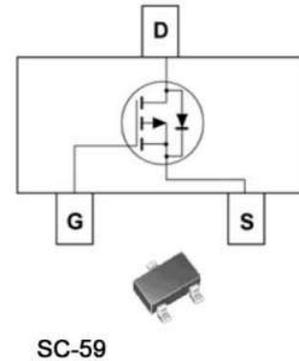
- $BV \cong -20\text{ V}$
- $P_{tot} \cong 1.25\text{ W}$
- $I_D \cong -4.3\text{ A}$
- $R_{DS(ON)} \cong 45\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$
- $R_{DS(ON)} \cong 55\text{ m}\Omega @ V_{GS} = -2.5\text{ V}$
- $R_{DS(ON)} \cong 75\text{ m}\Omega @ V_{GS} = -1.8\text{ V}$

Features

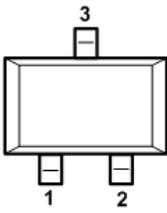
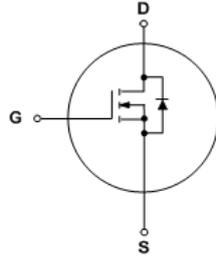
- Surface-mounted package
- Extremely low threshold voltage
- Advanced trench cell design

Applications

- Portable appliances



Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)		
2	Source(S)		
3	Drain(D)		

Top View

Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	-20	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 12	V
I_D^*	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = -4.5\text{ V}$	-	-4.3	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = -4.5\text{ V}$	-	-17.2	A
P_{tot}^*	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	1.25	W
		$T_A = 100\text{ }^\circ\text{C}$	-	0.5	
T_{stg}	Storage Temperature		-55	150	$^\circ\text{C}$
T_J	Junction Temperature		-	150	$^\circ\text{C}$
I_S^*	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	-4.3	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	100	$^\circ\text{C} / \text{W}$

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

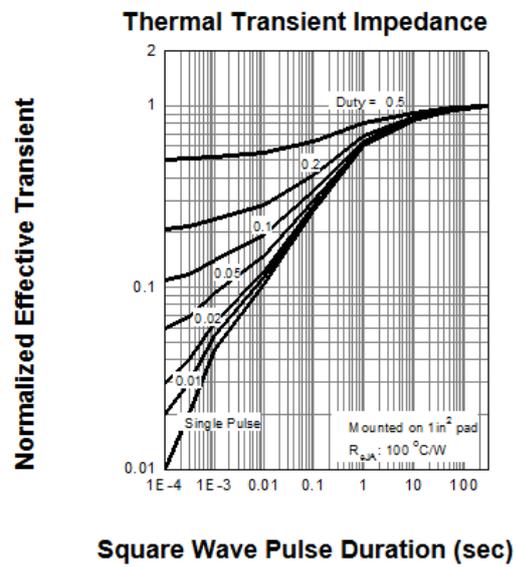
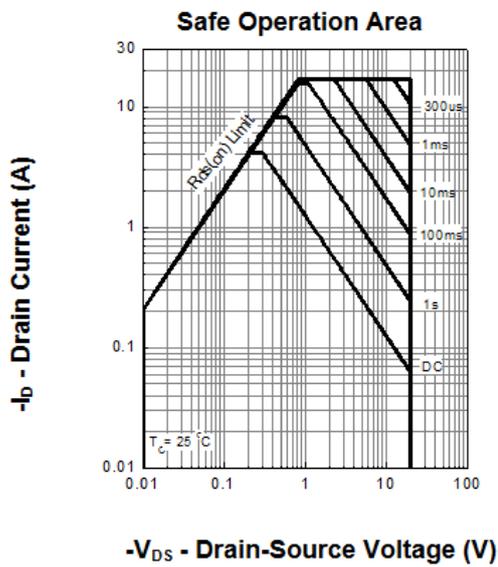
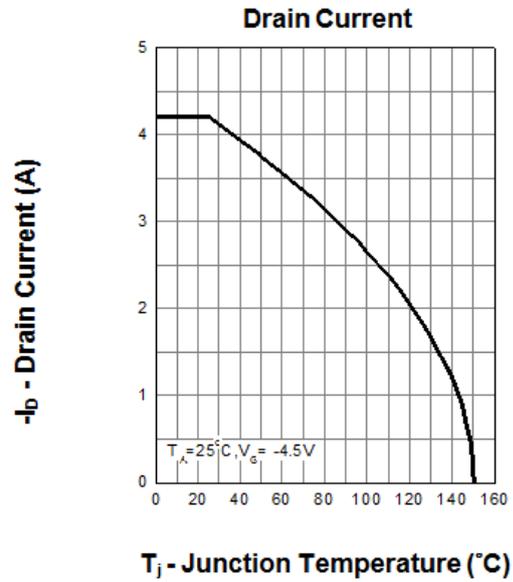
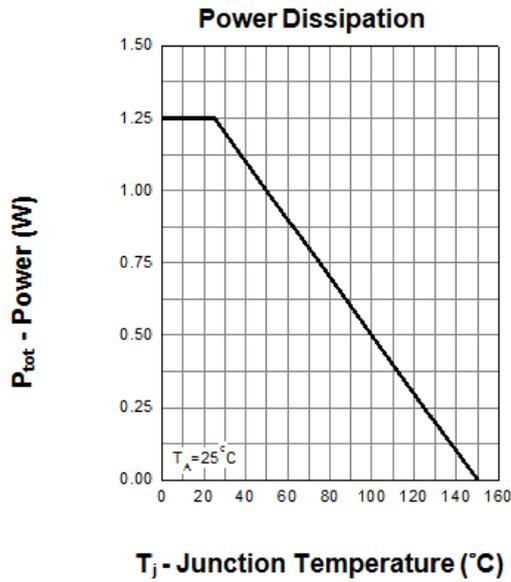
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\text{ }\mu\text{A}$	-20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\text{ }\mu\text{A}$	-0.4	-	-1.0	V
I_{DSS}	Drain Leakage Current	$V_{DS} = -20\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1	μA
		$T_J = 85\text{ }^\circ\text{C}$	-	-	-30	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 12\text{ V}, V_{DS} = 0\text{ V}$	-	-	± 100	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = -4.5\text{ V}, I_{DS} = -4.3\text{ A}$	-	-	45	m Ω
		$V_{GS} = -2.5\text{ V}, I_{DS} = -3.0\text{ A}$	-	-	55	
		$V_{GS} = -1.8\text{ V}, I_{DS} = -2.0\text{ A}$	-	-	75	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = -2\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD} = -2\text{ A}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	16	-	ns
Q_{rr}	Reverse Recovery Charge		-	8	-	nC
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -10\text{ V}$ Frequency = 1 MHz	-	1350	-	pF
C_{oss}	Output Capacitance		-	165	-	
C_{rss}	Reverse Transfer Capacitance		-	150	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -10\text{ V}, V_{GEN} = -4.5\text{ V},$ $R_G = 3\text{ }\Omega, I_{DS} = -4.0\text{ A}$	-	15	30	ns
t_r	Turn-on Rise Time		-	10	20	
$t_d(off)$	Turn-off Delay Time		-	40	80	
t_f	Turn-off Fall Time		-	13	26	
Q_g	Total Gate Charge	$V_{GS} = -4.5\text{ V}, V_{DS} = -10\text{ V},$ $I_{DS} = -4.0\text{ A}$	-	13	17	pC
Q_{gs}	Gate-Source Charge		-	2.5	-	
Q_{gd}	Gate-Drain Charge		-	3.0	-	

Notes :

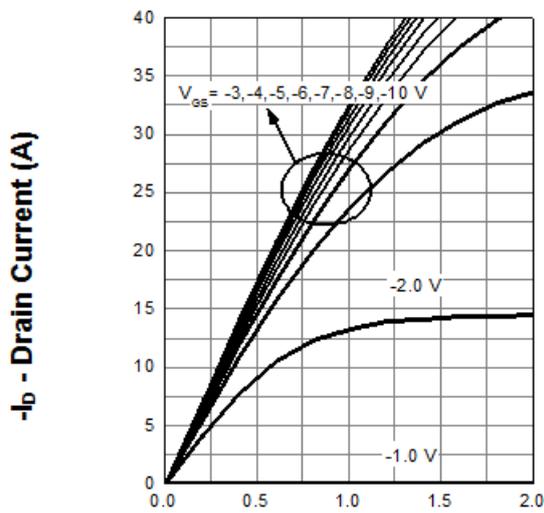
 a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

Typical Characteristics

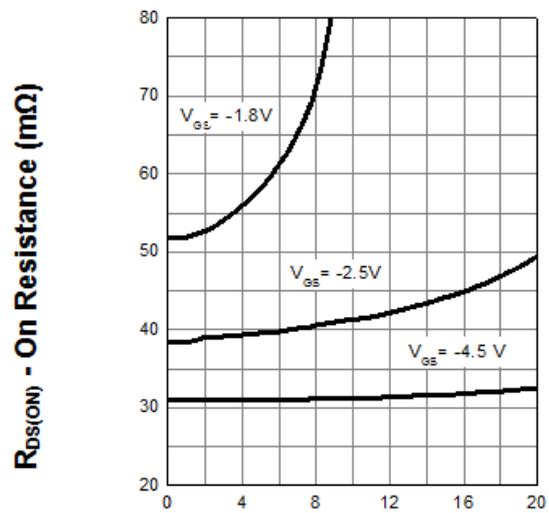


Output Characteristics



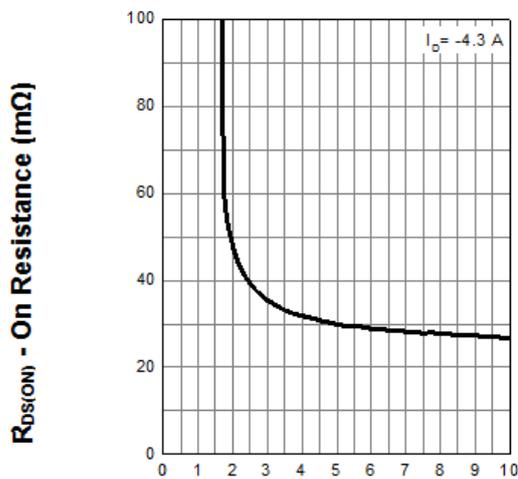
$-V_{DS}$ - Drain-Source Voltage (V)

Drain-Source On Resistance



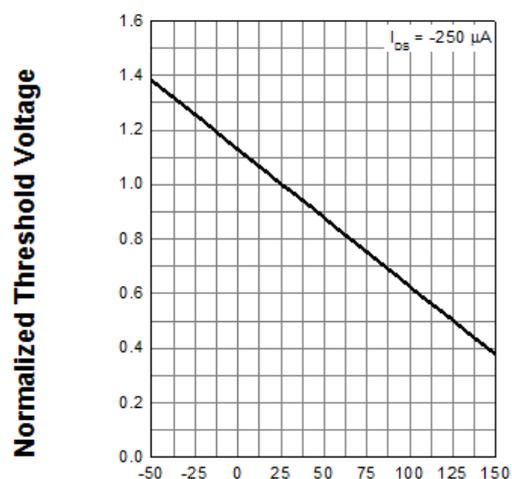
$-I_D$ - Drain Current (A)

Transfer Characteristics



$-V_{GS}$ - Gate-Source Voltage (V)

Gate Threshold Voltage



T_J - Junction Temperature ($^{\circ}$ C)

