

## N-Channel Enhancement Mode MOSFET

### Feature

30V/4.2A  $R_{DS(ON)} = 50\text{m}\Omega(\text{MAX}) @V_{GS} = 10\text{V}$ .

$R_{DS(ON)} = 60\text{m}\Omega(\text{MAX}) @V_{GS} = 4.5\text{V}$ .

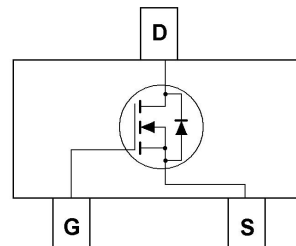
Super High dense cell design for extremely low  $R_{DS(ON)}$ .

Reliable and Rugged.

SC-59 for Surface Mount Package.



SC-59



### Applications

- Power Management
- Portable Equipment and Battery Powered Systems.

### Absolute Maximum Ratings $T_A=25^\circ\text{C}$ Unless Otherwise noted

Parameter	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous	$I_D$	4.2	A

### Electrical Characteristics $T_A=25^\circ\text{C}$ Unless Otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Units
<b>Off Characteristics</b>						
Drain to Source Breakdown Voltage	BVDSS	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	30	-	-	V
Zero-Gate Voltage Drain Current	IDSS	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$	-	-	1	$\mu\text{A}$
Gate Body Leakage Current, Forward	IGSSF	$V_{GS}=12\text{V}, V_{DS}=0\text{V}$	-	-	100	nA
Gate Body Leakage Current, Reverse	IGSSR	$V_{GS}=-12\text{V}, V_{DS}=0\text{V}$	-	-	-100	nA
<b>On Characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu\text{A}$	0.6	-	2.5	V
Static Drain-source On-Resistance	RDS(ON)	$V_{GS}=10\text{V}, I_D=4\text{A}$	-	48	50	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}, I_D=3\text{A}$	-	55	60	$\text{m}\Omega$
		$V_{GS}=2.5\text{V}, I_D=2\text{A}$	-	60	65	$\text{m}\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Drain-Source Diode Forward Voltage	VSD	$V_{GS}=0\text{V}, I_S=1.25\text{A}$			1.2	V



Dynamic					
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=2A$	8.5	12	nC
$Q_{gs}$	Gate-Source Charge		1.1		
$Q_{gd}$	Gate-Drain Charge		1.8		
$t_{on}$	Turn-on Time	$V_{DD}=15V, I_D=2A, V_{GS}=10V, R_G=6\Omega$		40	ns
$t_{d(ON)}$	Turn-on Delay time		11		
$t_r$	Turn-on Rise Time		17		
$T_{d(off)}$	Turn-off Delay Time		37		
$t_f$	Turn-off Fall Time		20		
$t_{off}$	Turn-off Time			60	

## Typical Characteristics

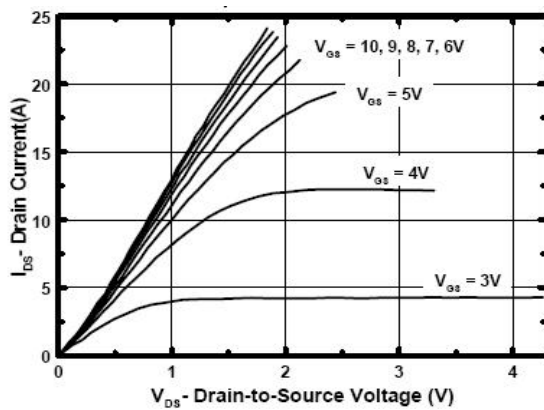


Figure 1 . Output Characteristics

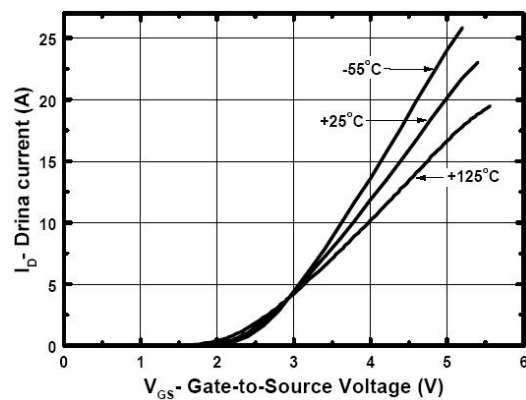


Figure 2 . Transfer Characteristics

## Typical Characteristics

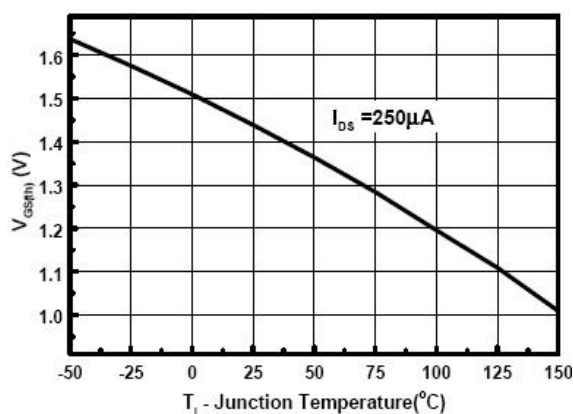


Figure 3 . Gate Threshold Variation with Temperature

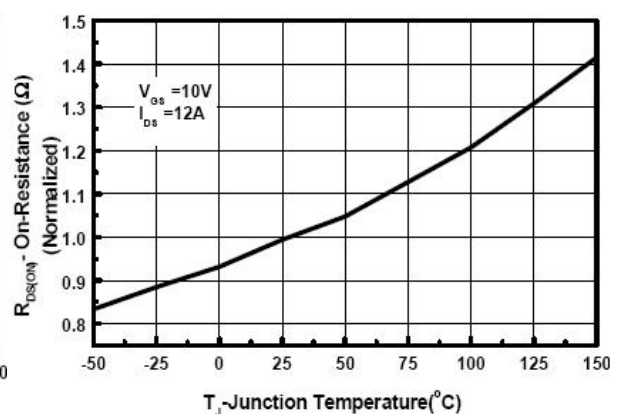


Figure 4 . On-Resistance Variation with Temperature



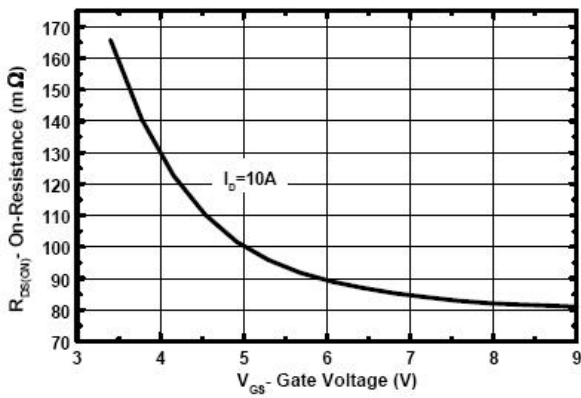


Figure 5 . On-Resistance vs. Gate-to-Source Voltage

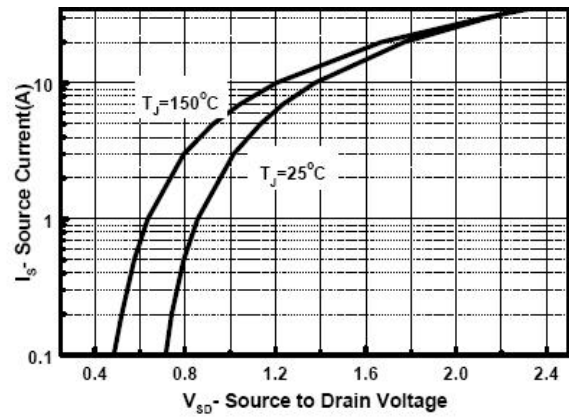


Figure 6 . Source-Drain Diode Forward



Package Outline Dimensions (UNIT: mm)

