

### General Description

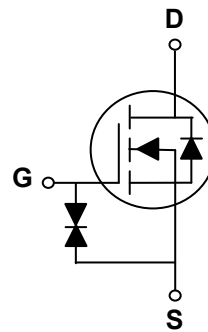
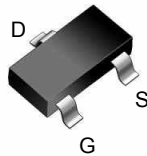
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

### Features

$V_{DS}$	30V
$I_D$ (at $V_{GS}=4.5V$ )	2.0A
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	75m $\Omega$ (Typ)

ESD protected

**SOT-323**



### Absolute Maximum Ratings $T_A=25^\circ C$ unless otherwise noted

Parameter	Symbol	Maximum	Units	
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V	
Drain Current-Continuous	TC=25 $^\circ C$	$I_D$	2.0	A
	TC=70 $^\circ C$	$I_D$	1.6	A
Drain Current – Pulsed	$I_{DM}$	8.0	A	
Maximum Power Dissipation	$P_D$	1.0	W	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ C$	

### Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta Jc}$		1.1	$^\circ C / W$
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		62	$^\circ C / W$

## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V			±10	μA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.9	1.5	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =1.0A		75	94	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.9A		82	107	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.8A		103	139	mΩ
<b>DYNAMIC PARAMETERS</b>						
C <sub>iSS</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, F=1.0MHz		390		pF
C <sub>oss</sub>	Output Capacitance			56		pF
C <sub>rSS</sub>	Reverse Transfer Capacitance			33		pF
<b>SWITCHING PARAMETERS</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>GS</sub> =10V V <sub>DS</sub> =15V R <sub>L</sub> =15Ω R <sub>G</sub> =6Ω		46		nS
t <sub>r</sub>	Turn-on Rise Time			77		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			413		nS
t <sub>f</sub>	Turn-Off Fall Time			48		nS
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =6.7A, V <sub>GS</sub> =4.5V		3.8		nC
Q <sub>gs</sub>	Gate-Source Charge			0.6		nC
Q <sub>gd</sub>	Gate-Drain Charge			1.3		nC
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>SD</sub> =1A		0.70	1.2	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≅ 300us , duty cycle ≅ 2%.
3. Essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

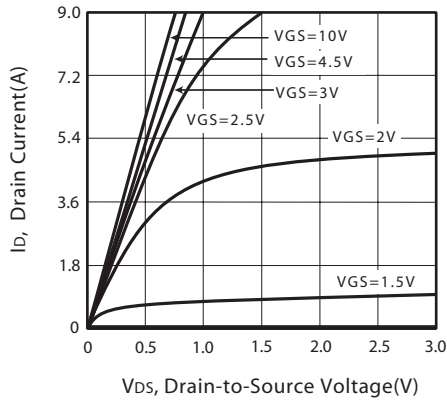


Figure 1. Output Characteristics

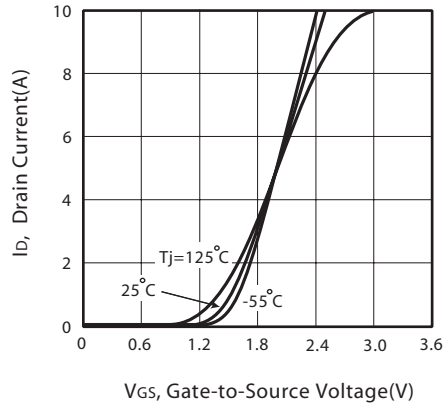


Figure 2. Transfer Characteristics

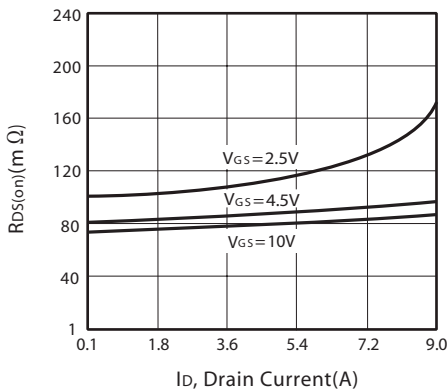


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

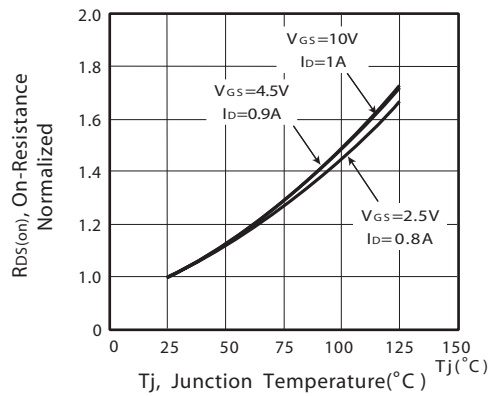


Figure 4. On-Resistance Variation with Drain Current and Temperature

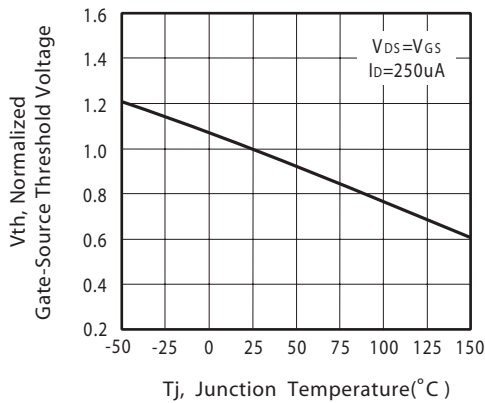


Figure 5. Gate Threshold Variation with Temperature

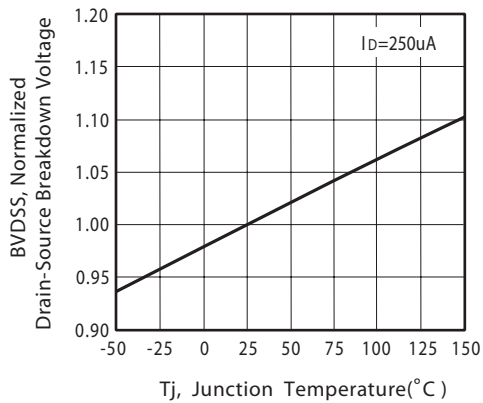


Figure 6. Breakdown Voltage Variation with Temperature

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

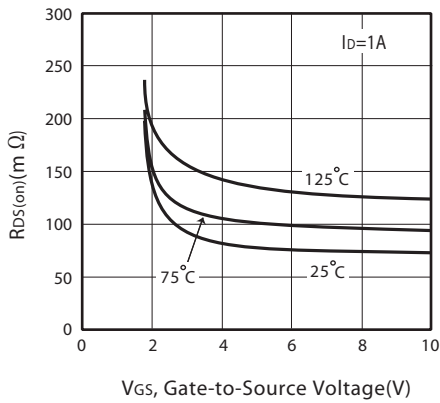


Figure 7. On-Resistance vs. Gate-Source Voltage

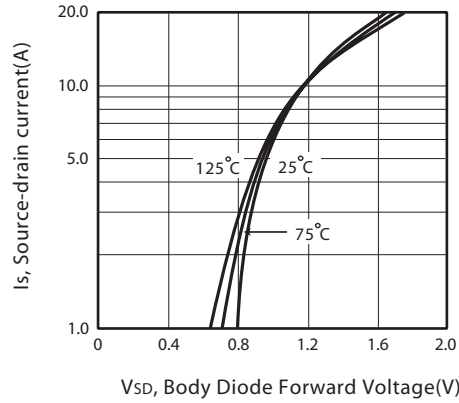


Figure 8. Body Diode Forward Voltage Variation with Source Current

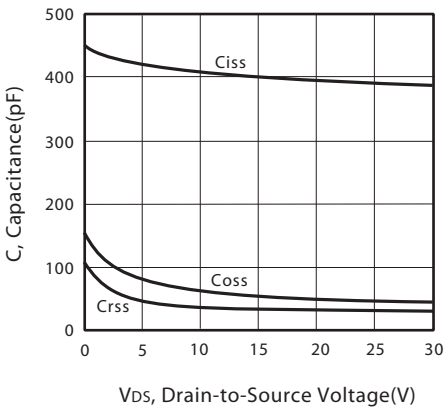


Figure 9. Capacitance

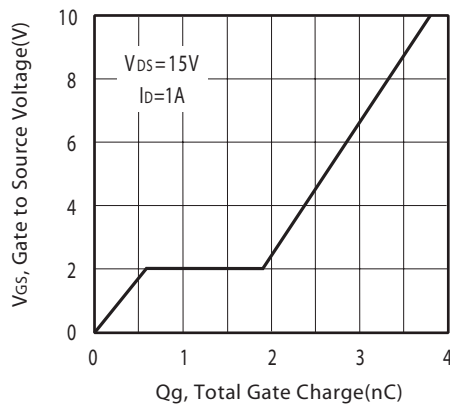


Figure 10. Gate Charge

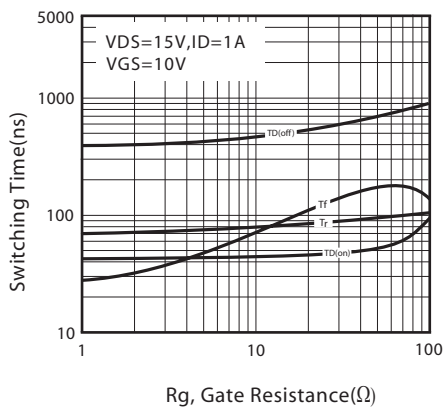


Figure 11. switching characteristics

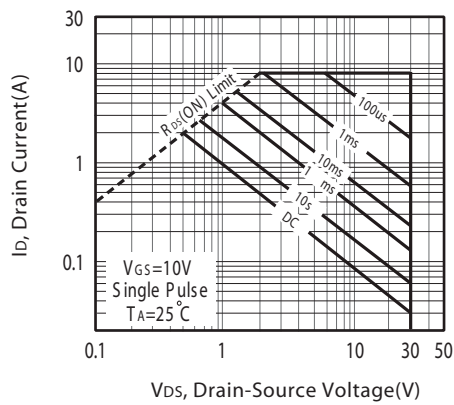


Figure 12. Maximum Safe Operating Area

SOT323 PACKAGE INFORMATION

