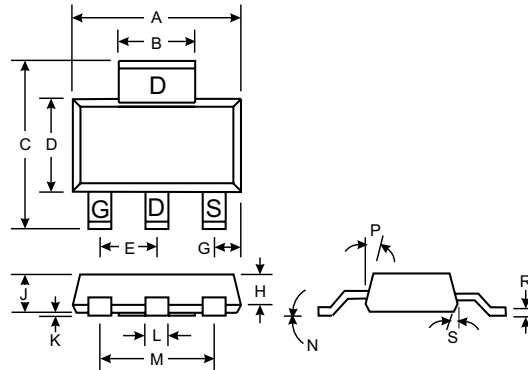


**Features**

- High Cell Density DMOS Technology
- Low On-State Resistance
- High Power and Current Capability
- Fast Switching Speed
- High Transient Tolerance



SOT-223		
Dim	Min	Max
A	6.30	6.71
B	2.90	3.10
C	6.71	7.29
D	3.30	3.71
E	2.22	2.35
G	0.92	1.00
H	1.10	1.30
J	1.55	1.80
K	0.025	0.102
L	0.66	0.79
M	4.55	4.70
N	—	10°
P	10°	16°
R	0.254	0.356
S	10°	16°
All Dimensions in mm		

**Mechanical Data**

- SOT-223 Plastic Case
- Terminal Connections: See Outline Drawing and Internal Circuit Diagram Above

**Maximum Ratings** 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	-60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	-2.5 -15	A
Maximum Power Dissipation	$P_d$	3.0 1.3 1.1	W
Operating and Storage Temperature Range	$T_j, T_{STG}$	-65 to +150	°C

**Thermal Characteristics**

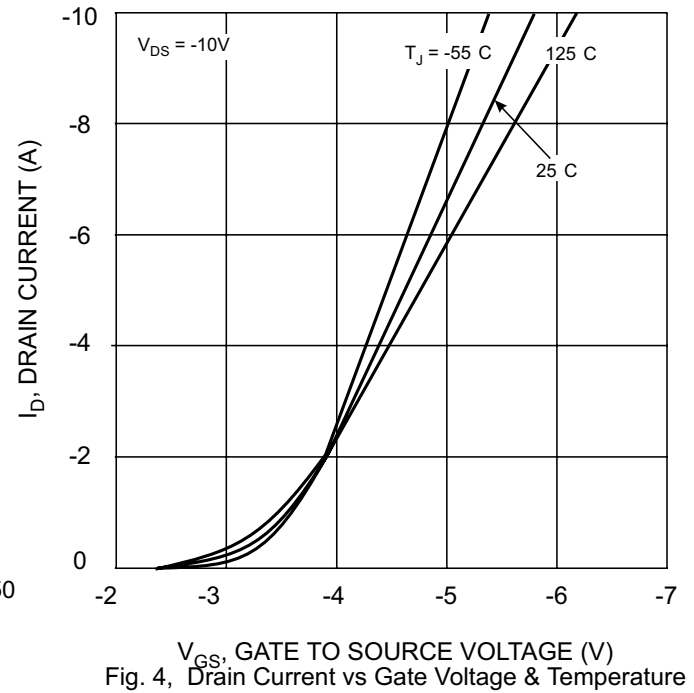
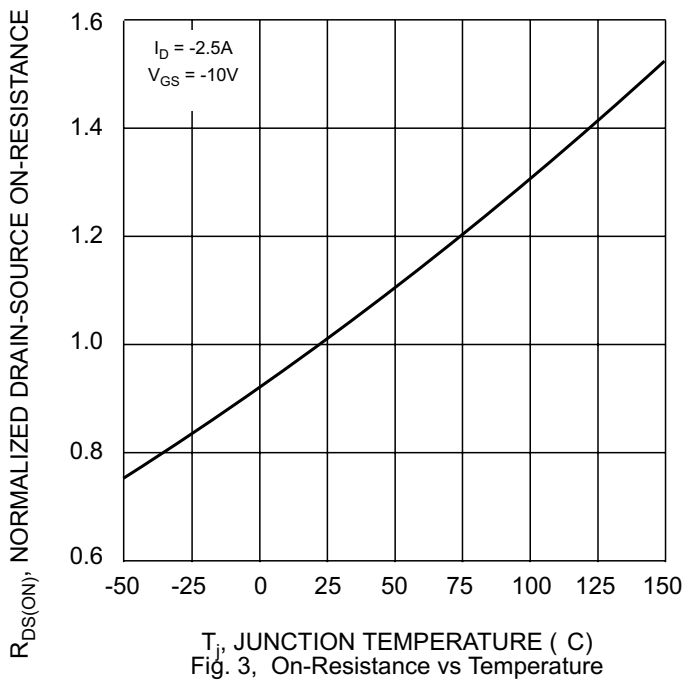
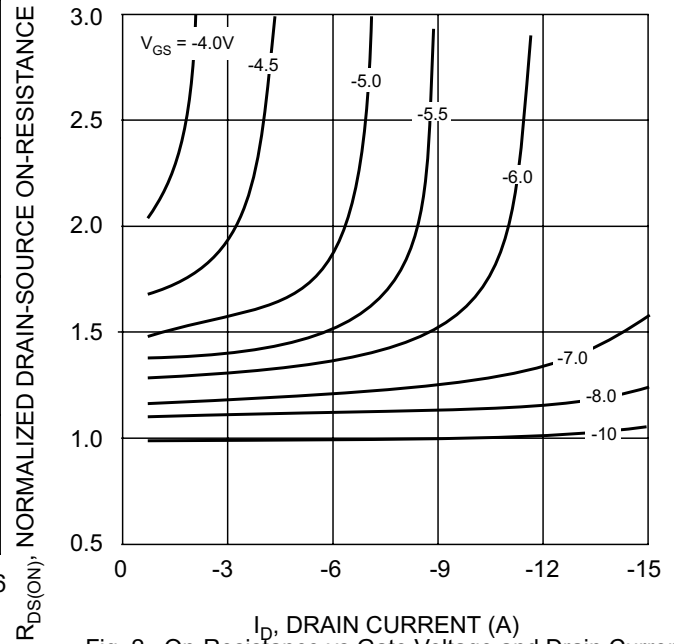
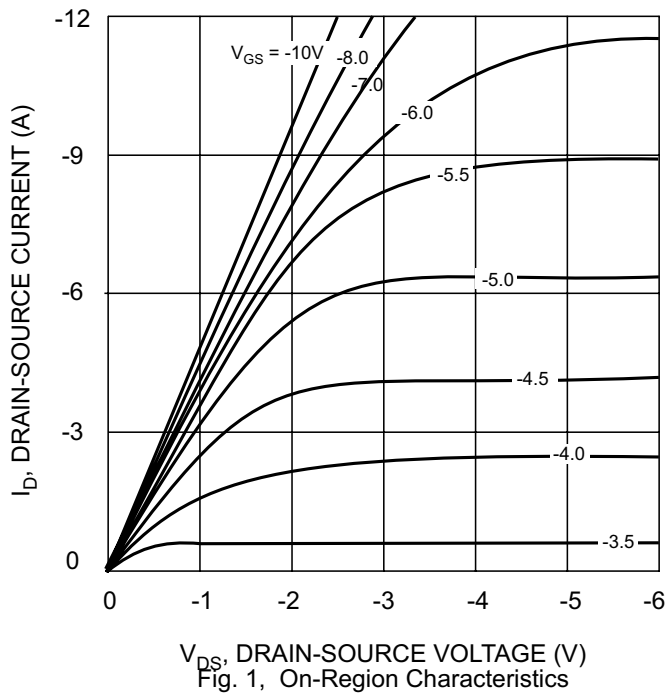
Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	42	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	12	°C/W

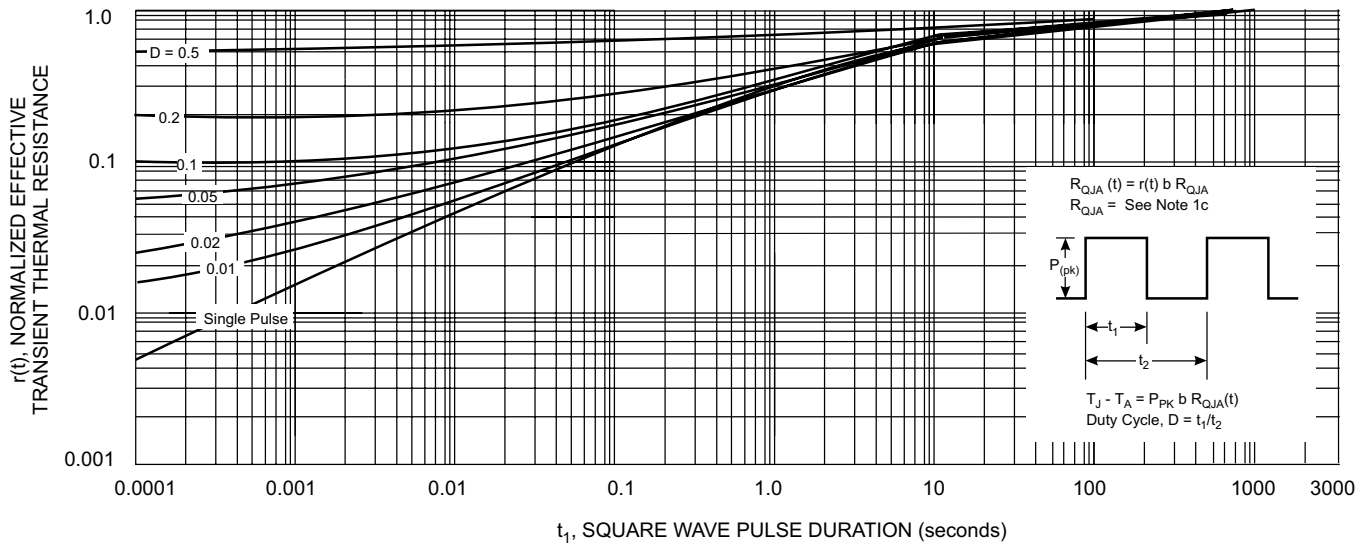
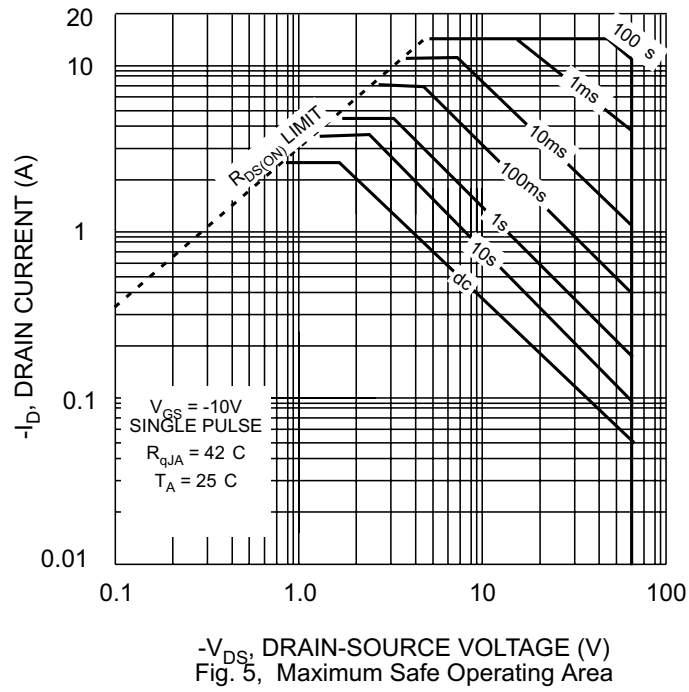
Notes: 1.  $R_{\theta JA}$  is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins.  $R_{\theta JC}$  is guaranteed by design while  $R_{\theta CA}$  is determined by the user's board design.  
 1a. With 1 in<sup>2</sup> oz 2 oz. copper mounting pad  $R_{\theta JA} = 42^\circ\text{C/W}$ .  
 1b. With 0.0066 in<sup>2</sup> oz 2 oz. copper mounting pad  $R_{\theta JA} = 95^\circ\text{C/W}$ .  
 1c. With 0.0123 in<sup>2</sup> oz 2 oz. copper mounting pad  $R_{\theta JA} = 110^\circ\text{C/W}$ .

## Electrical Characteristics 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-60	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current $T_j = 125^\circ C$	$I_{DSS}$	—	—	-10 -100	$\mu A$	$V_{DS} = -60V, V_{GS} = 0V$
Gate-Body Leakage, Forward	$I_{GSSF}$	—	—	100	nA	$V_{GS} = 20V, V_{DS} = 0V$
Gate-Body Leakage, Reverse	$I_{GSSR}$	—	—	-100	nA	$V_{GS} = -20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 2)</b>						
Gate Threshold Voltage $T_j = 125^\circ C$	$V_{GS(th)}$	-2.0 -0.8	-2.4 -2.0	-4.0 -2.6	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
Static Drain-Source On-Resistance $T_j = 125^\circ C$	$R_{DS(on)}$	—	0.21 0.3 0.36	0.30 0.45 0.50	$\Omega$	$V_{GS} = -10V, I_D = -2.5A$ $V_{GS} = -10V, I_D = -2.5A$ $V_{GS} = -4.5V, I_D = -2.0A$
On-State Drain Current	$I_{D(ON)}$	-12	—	—	A	$V_{GS} = -10V, V_{DS} = -5.0V$
Forward Transconductance	$g_{FS}$	—	3.5	—	m	$V_{DS} = -10V, I_D = -2.5A$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	570	—	pF	$V_{DS} = -25V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	—	140	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	40	—	pF	
<b>SWITCHING CHARACTERISTICS (Note 2)</b>						
Turn-On Delay Time	$t_{D(ON)}$	—	8.0	15	ns	$V_{DD} = -30V, I_D = -1.0A$ $V_{GEN} = -10V, R_{GEN} = 6.0\Omega$
Turn-On Rise Time	$t_r$	—	20	40	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	20	40	ns	
Turn-Off Fall Time	$t_f$	—	5.0	20	ns	
Total Gate Charge	$Q_g$	—	16	25	nC	$V_{DS} = -30V, I_D = -2.5A$ $V_{GS} = -10V$
Gate-Source Charge	$Q_{gs}$	—	2.0	5.0	nC	
Gate-Drain Charge	$Q_{gd}$	—	4.0	8.0	nC	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
Max Continuous Drain-Source Diode Forward Current	$I_S$	—	—	-2.3	A	
Drain-Source Diode Forward Voltage	$V_{SD}$	—	—	-1.3	V	$V_{GS} = 0V, I_S = -2.5A$ (Note 2)

Notes: 2. Pulse Test: Pulse width | 300 $\mu s$ , duty cycle | 2.0%.





Remark: Thermal characterization performed under conditions described in note 1c. Transient thermal response will change depending on the circuit board design.