

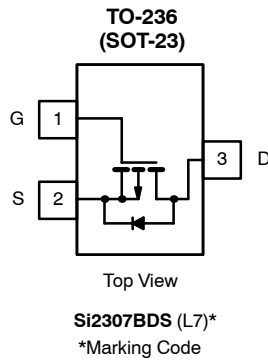


New Product

Si2307BDS  
Vishay Siliconix

## P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A) <sup>b</sup>
-30	0.078 @ $V_{GS} = -10$ V	-3.2
	0.130 @ $V_{GS} = -4.5$ V	-2.5



Ordering Information: Si2307BDS-T1—E3 (Lead Free)

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 sec	Steady State	Unit
Drain-Source Voltage		$V_{DS}$	-30		V
Gate-Source Voltage		$V_{GS}$	$\pm 20$		
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>b</sup>	$T_A = 25^\circ\text{C}$	$I_D$	-3.2	-2.5	A
	$T_A = 70^\circ\text{C}$		-2.6	-2.0	
Pulsed Drain Current <sup>a</sup>		$I_{DM}$	-12		
Continuous Source Current (Diode Conduction) <sup>b</sup>		$I_S$	-1.25	-0.75	
Power Dissipation <sup>b</sup>	$T_A = 25^\circ\text{C}$	$P_D$	1.25	0.75	W
	$T_A = 70^\circ\text{C}$		0.8	0.48	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>b</sup>	$R_{thJA}$	80	100	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>c</sup>		130	166	

Notes

- a. Pulse width limited by maximum junction temperature.
- b. Surface Mounted on FR4 Board,  $t \leq 5$  sec.
- c. Surface Mounted on FR4 Board.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

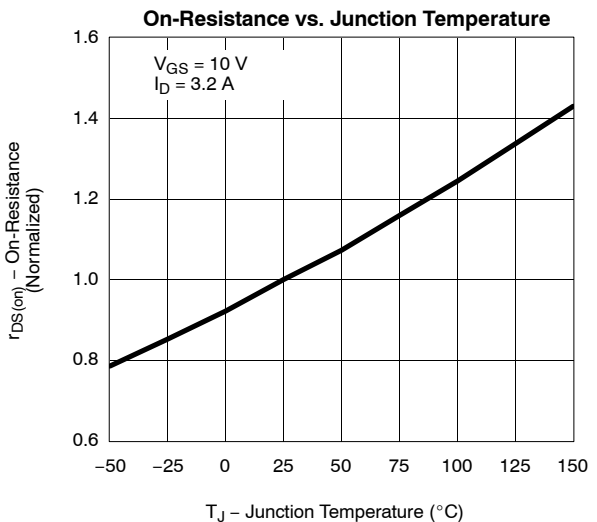
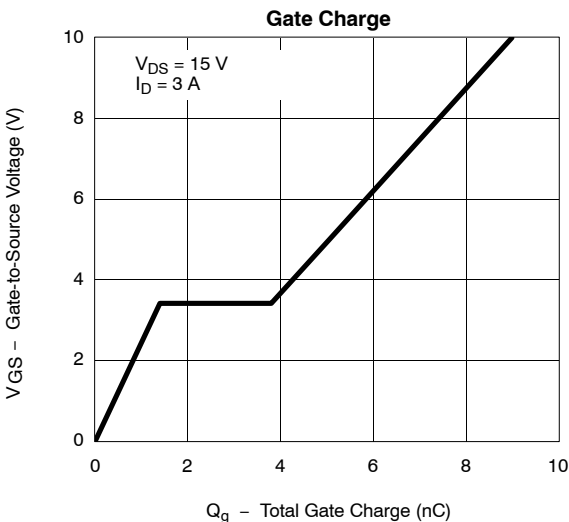
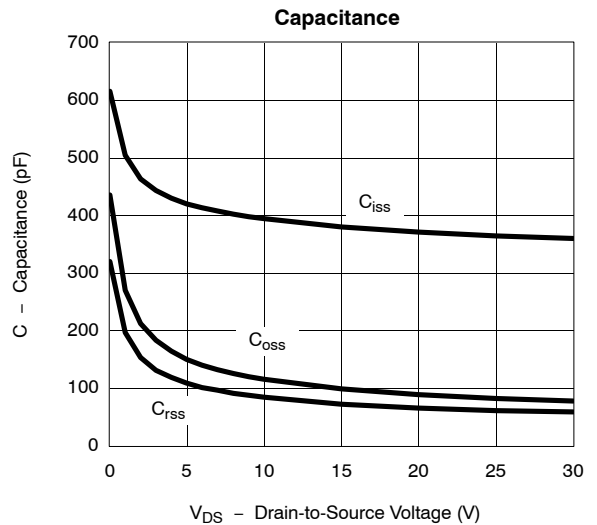
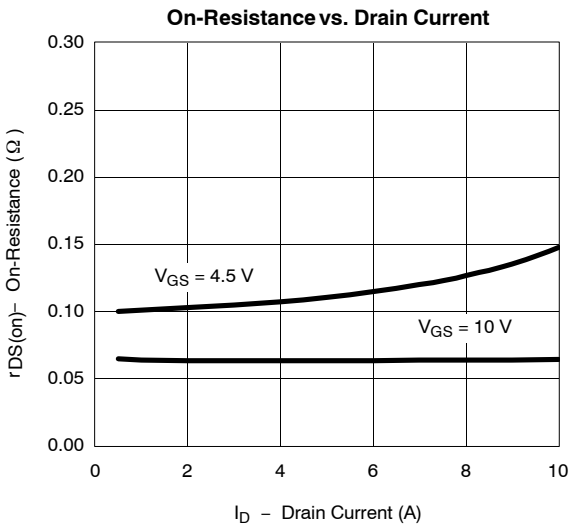
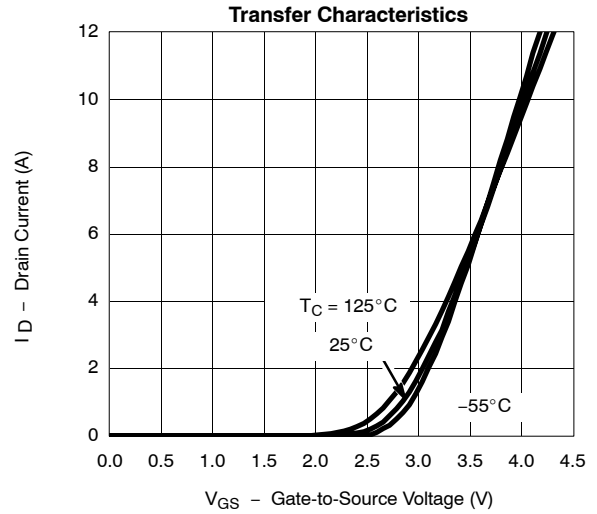
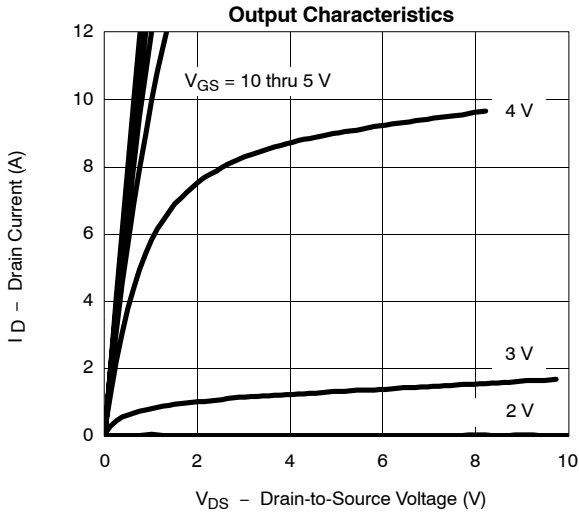
SPECIFICATIONS ( $T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -10\ \mu\text{A}$	-30			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-1.0		-3.0	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			-10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \leq -10\text{ V}, V_{GS} = -10\text{ V}$	-6			A
Drain-Source On-Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -3.2\text{ A}$		0.063	0.078	$\Omega$
		$V_{GS} = -4.5\text{ V}, I_D = -2.5\text{ A}$		0.105	0.130	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -10\text{ V}, I_D = -3.2\text{ A}$		5.0		S
Diode Forward Voltage	$V_{SD}$	$I_S = -0.75\text{ A}, V_{GS} = 0\text{ V}$		-0.85	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}$ $I_D \cong -1.7\text{ A}$		9.0	15	nC
Gate-Source Charge	$Q_{gs}$			1.4		
Gate-Drain Charge	$Q_{gd}$			2.4		
Gate Resistance	$R_g$	$f = 1.0\text{ MHz}$		8		$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -15\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$		380		pF
Output Capacitance	$C_{oss}$			100		
Reverse Transfer Capacitance	$C_{rss}$			75		
<b>Switching<sup>c</sup></b>						
Turn-On Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 15\ \Omega$ $I_D \cong -1.0\text{ A}, V_{GEN} = -4.5\text{ V}$ $R_g = 6\ \Omega$		9	20	ns
	$t_r$			12	12	
Turn-Off Time	$t_{d(off)}$			25	40	
	$t_f$			14	21	

## Notes

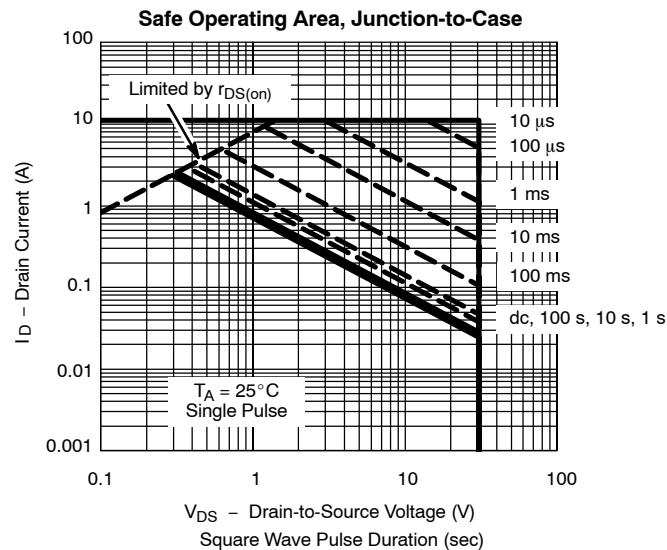
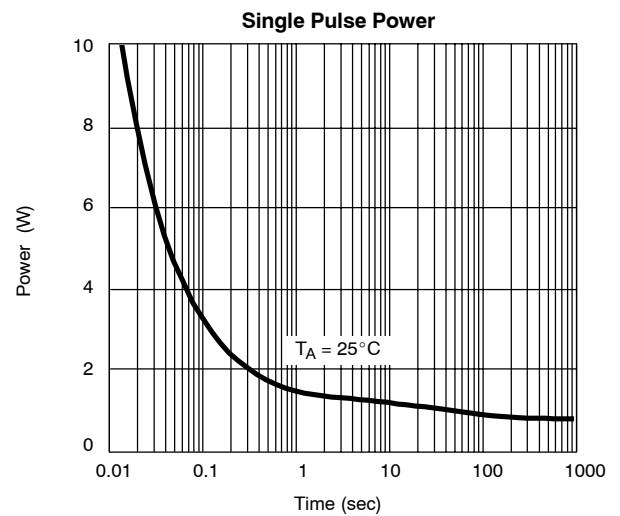
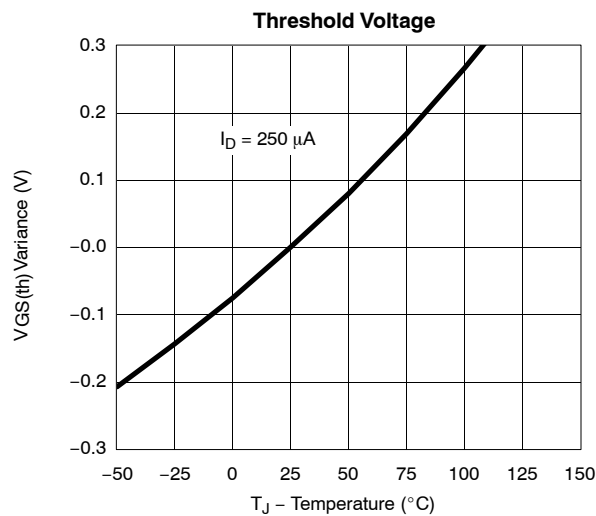
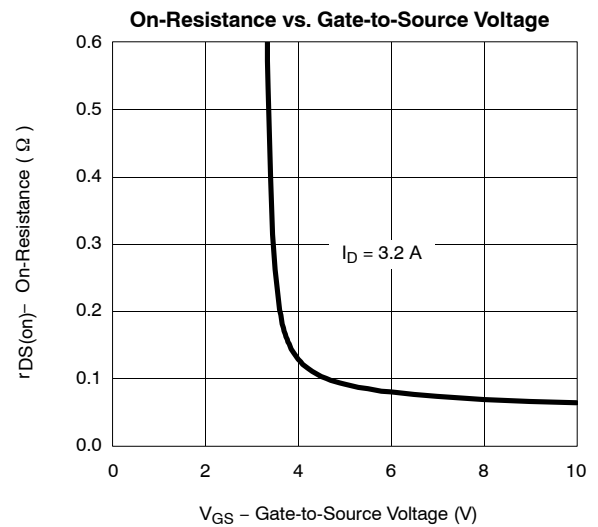
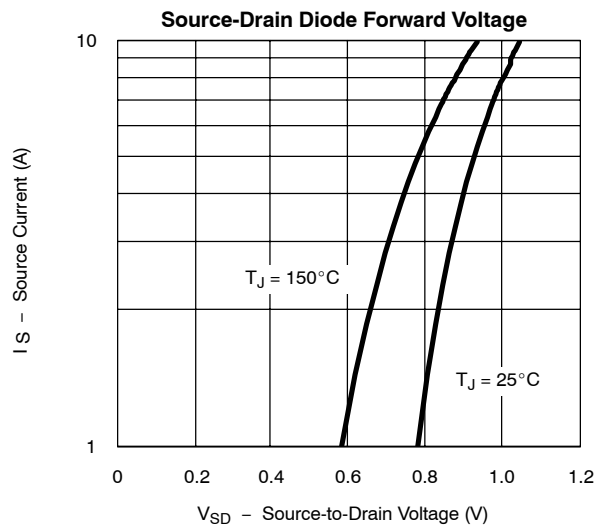
- Pulse test:  $PW \leq 300\ \mu\text{s}$  duty cycle  $\leq 2\%$ .
- For DESIGN AID ONLY, not subject to production testing.
- Switching time is essentially independent of operating temperature. • FaxBack 408-970-5600



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

