



New Product

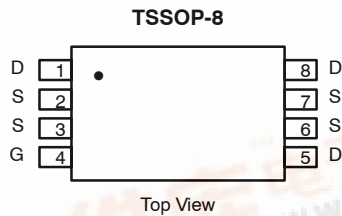
Si6459BDQ
Vishay Siliconix

P-Channel 60-V (D-S) MOSFET

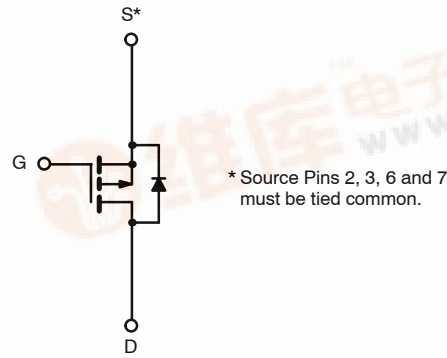
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-60	0.115 @ $V_{GS} = -10$ V	-2.7
	0.150 @ $V_{GS} = -4.5$ V	-2.4

FEATURES

- TrenchFET® Power MOSFET



Ordering Information: Si6459BDQ-T1



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	-60		V
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	-2.7	-2.2	A
	T _A = 70°C		-2.2	-1.8	
Pulsed Drain Current (10 μs Pulse Width)		I _{DM}	-20		
Continuous Source Current (Diode Conduction) ^a		I _S	-1.25	-0.83	
Avalanche Current	L = 0.1 mH	I _{AS}	15		mJ
Single Pulse Avalanche Energy		E _{AS}	11		
Maximum Power Dissipation ^a	T _A = 25°C	P _D	1.50	1.0	W
	T _A = 70°C		1.0	0.67	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	66	83	$^\circ\text{C/W}$
	Steady State		100	120	
Maximum Junction-to-Foot	Steady State	R_{thJF}	50	60	

Notes:
a. Surface Mounted on 1" x 1" FR4 Board.

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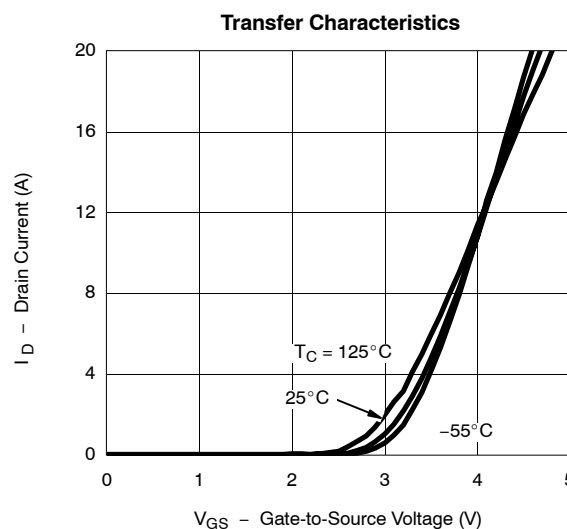
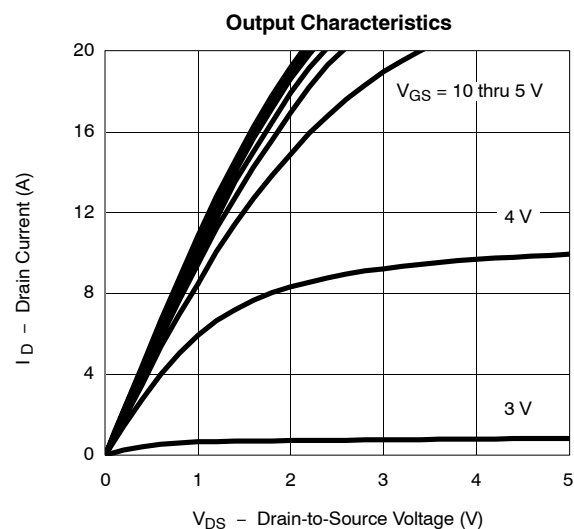
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\ \mu\text{A}$	-1		-3	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 20\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -60\ \text{V}$, $V_{GS} = 0\ \text{V}$			-1	μA
		$V_{DS} = -60\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 70^\circ\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5\ \text{V}$, $V_{GS} = -10\ \text{V}$	-20			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10\ \text{V}$, $I_D = -2.7\ \text{A}$		0.092	0.115	Ω
		$V_{GS} = -4.5\ \text{V}$, $I_D = -2.4\ \text{A}$		0.120	0.150	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\ \text{V}$, $I_D = -2.7\ \text{A}$		8		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -1.25\ \text{A}$, $V_{GS} = 0\ \text{V}$		-0.8	-1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -30\ \text{V}$, $V_{GS} = -10\ \text{V}$, $I_D = -2.7\ \text{A}$		14.5	22	nC
Gate-Source Charge	Q_{gs}			2.2		
Gate-Drain Charge	Q_{gd}			3.7		
Gate Resistance	R_g			14		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -30\ \text{V}$, $R_L = 30\ \Omega$ $I_D \cong -1\ \text{A}$, $V_{GEN} = -10\ \text{V}$, $R_G = 6\ \Omega$		10	15	ns
Rise Time	t_r			15	22	
Turn-Off Delay Time	$t_{d(off)}$			50	75	
Fall Time	t_f			35	55	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -1.25\ \text{A}$, $di/dt = 100\ \text{A}/\mu\text{s}$		30	50	

Notes

- a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

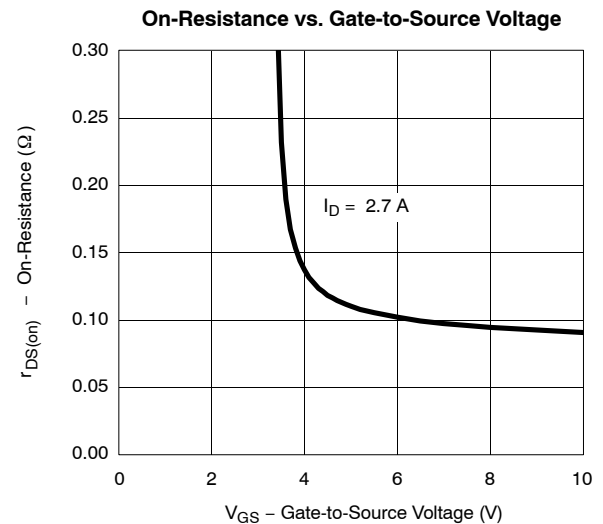
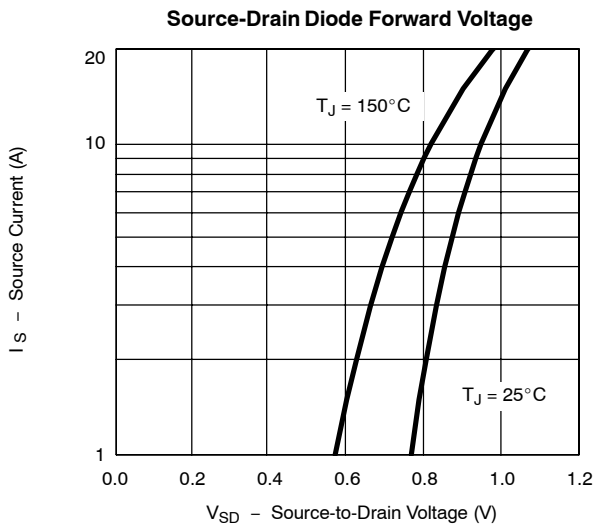
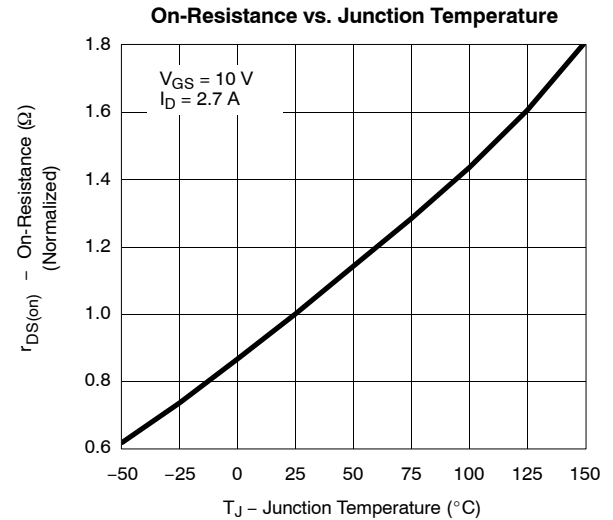
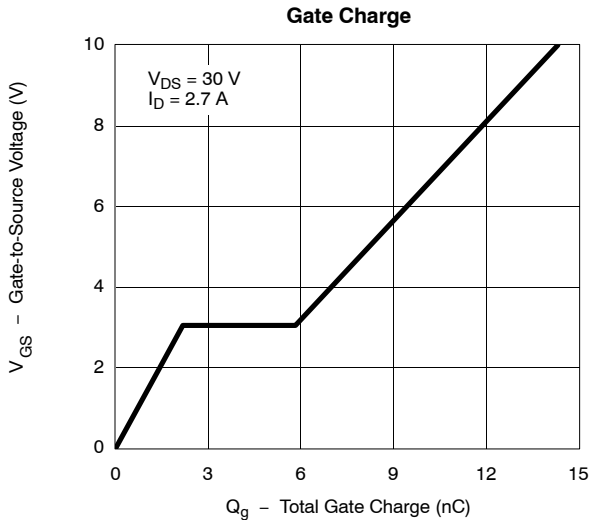
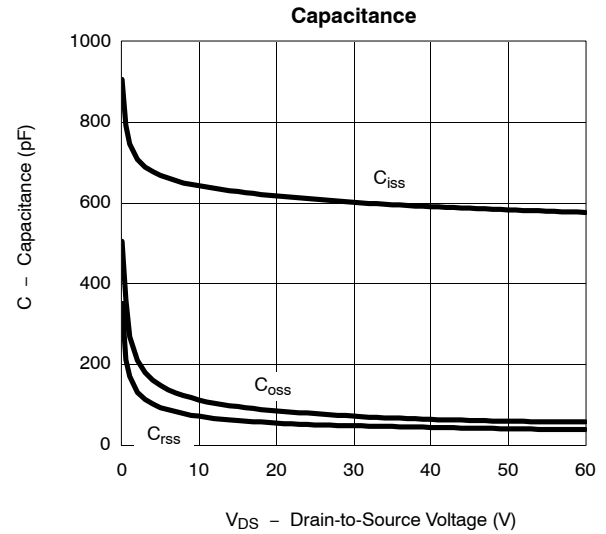
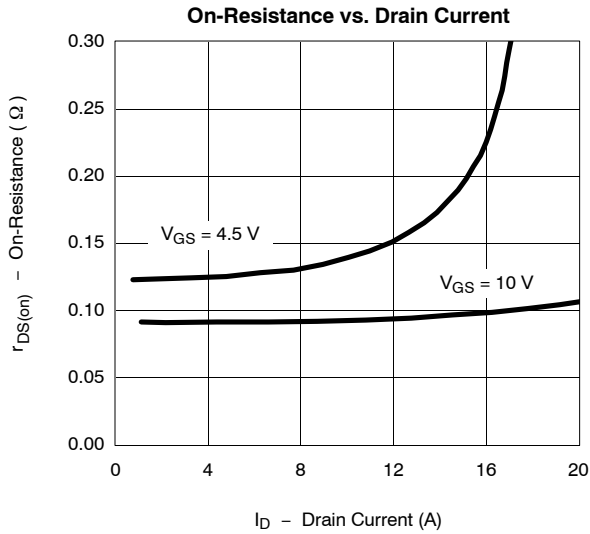




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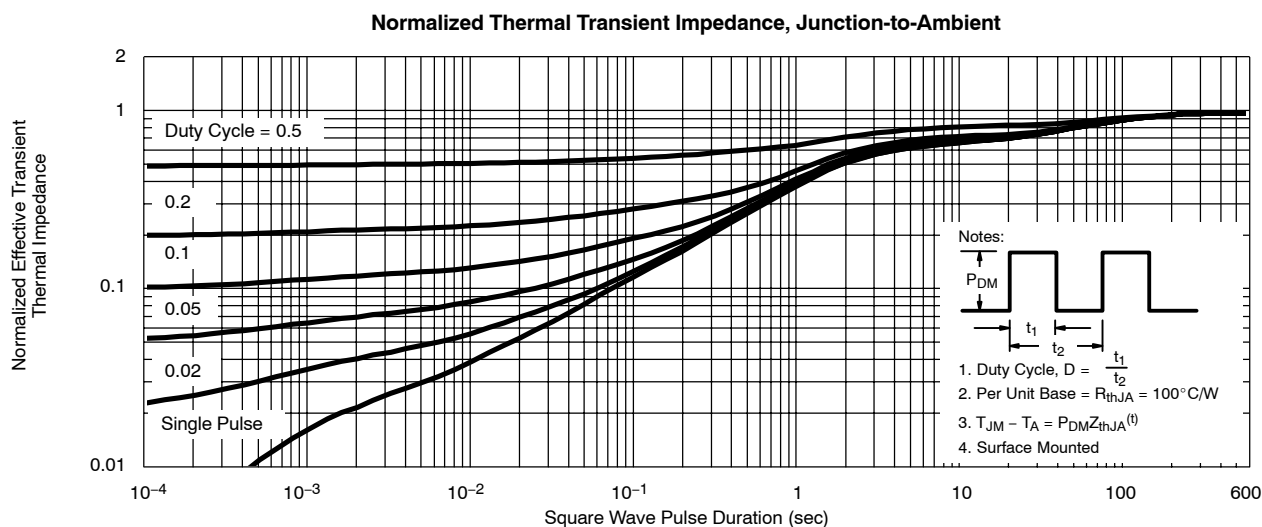
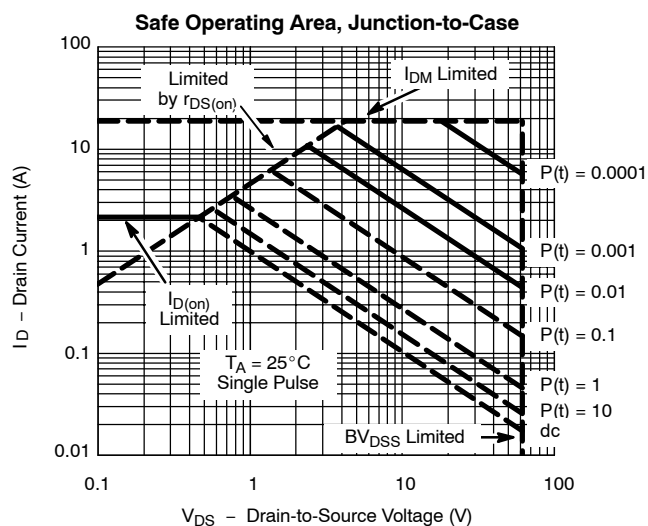
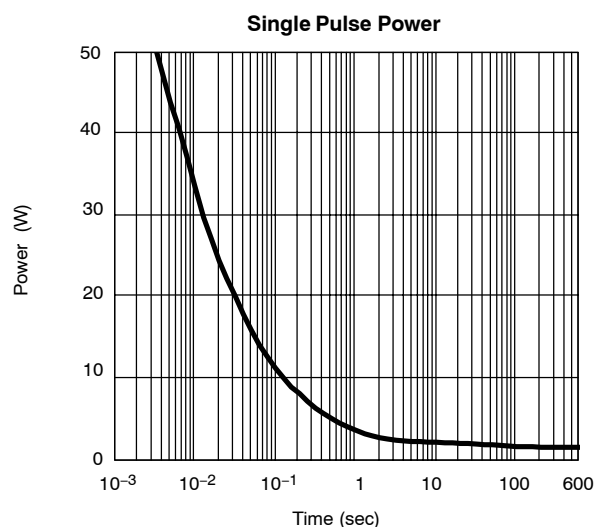
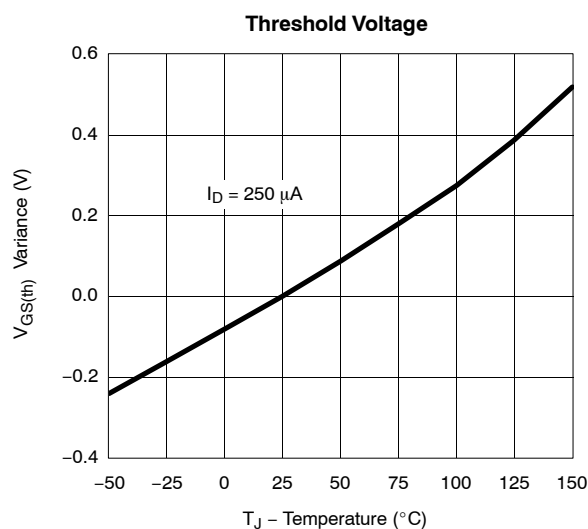
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