P-Channel 20-V (D-S) MOSFET

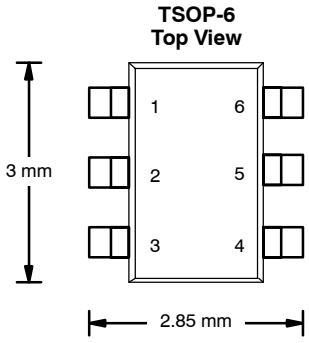
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
−20	0.080 @ V_{GS} = −10 V	−4.0
	0.170 @ V_{GS} = −4.5 V	−2.7

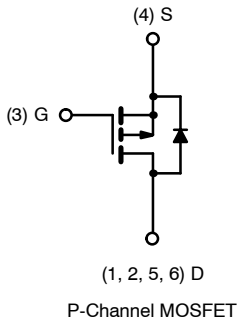
FEATURES

- TrenchFET® Power MOSFET

APPLICATIONS

- Load Switch
  - Notebook PC
  - Game Machine





Ordering Information: Si3465DV-T1—E3 (Lead Free)
Marking Code: 5C

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	−20		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	−4.0	−3.0	A
	T_A = 70°C		−3.2	−2.4	
Pulsed Drain Current		I_{DM}	−20		
Continuous Source Current (Diode Conduction)[a]		I_S	−1.7	−0.95	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.0	1.14	W
	T_A = 70°C		1.3	0.73	
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 ≤ 5 sec	R_{thJA}	52	62.5	°C/W
	Steady State		92	110	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	34	41	

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

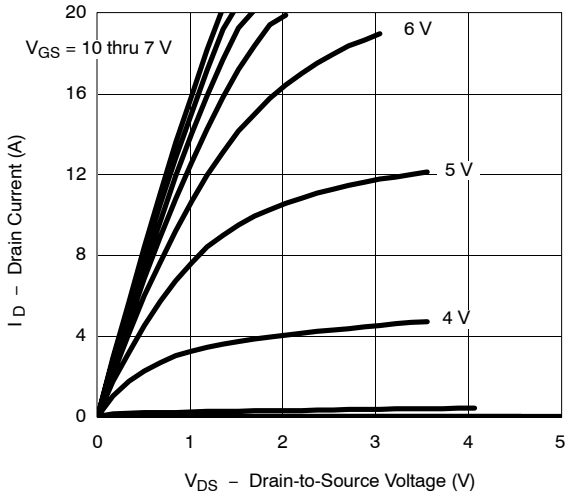
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = –250 μA	–1.0		–3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = –20 V, V_{GS} = 0 V			–1	μA
		V_{DS} = –20 V, V_{GS} = 0 V, T_J = 85°C			–10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≤ –5 V, V_{GS} = –10 V	–20			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = –10 V, I_D = –4 A		0.065	0.080	Ω
		V_{GS} = –4.5 V, I_D = –2.7 A		0.140	0.170	
Forward Transconductance[a]	g_{fs}	V_{DS} = –15 V, I_D = –4 A		6		S
Diode Forward Voltage[a]	V_{SD}	I_S = –1.7 A, V_{GS} = 0 V		–0.8	–1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = –10 V, V_{GS} = –5 V, I_D = –4 A		3.5	5.5	nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			1.4		
Gate Resistance	R_g	f = 1 MHz		9.5		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = –10 V, R_L = 10 Ω I_D ≅ –1 A, V_{GEN} = –10 V, R_g = 6 Ω		9	15	ns
Rise Time	t_r			13	20	
Turn-Off Delay Time	$t_{d(off)}$			19	30	
Fall Time	t_f			8	15	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = –1.7 A, di/dt = 100 A/μs		20	40	

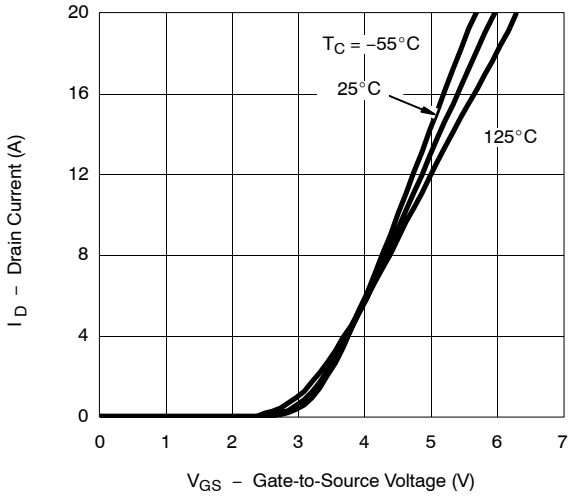
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

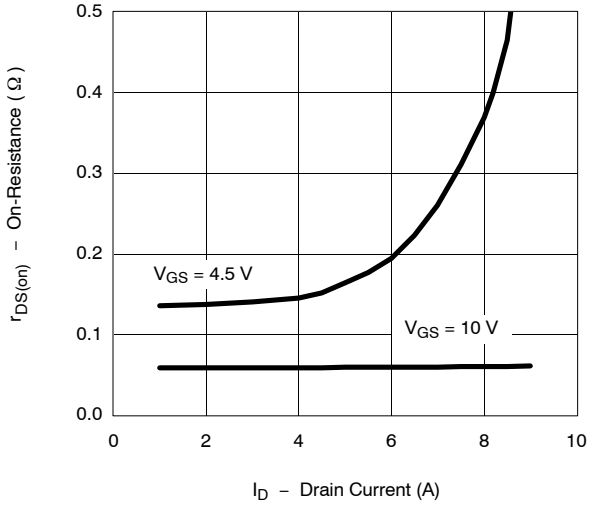


Transfer Characteristics

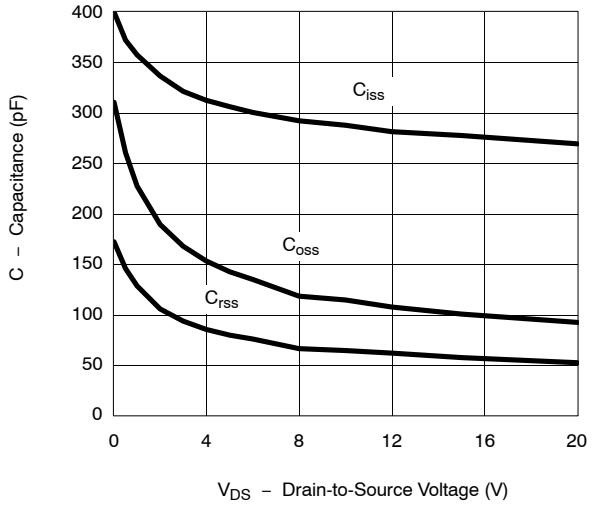


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

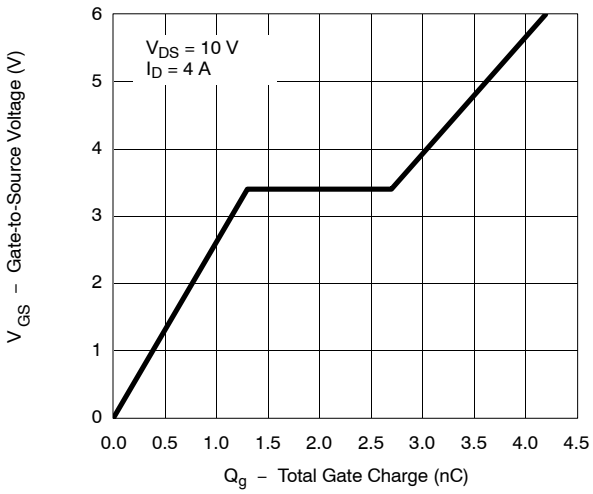
On-Resistance vs. Drain Current



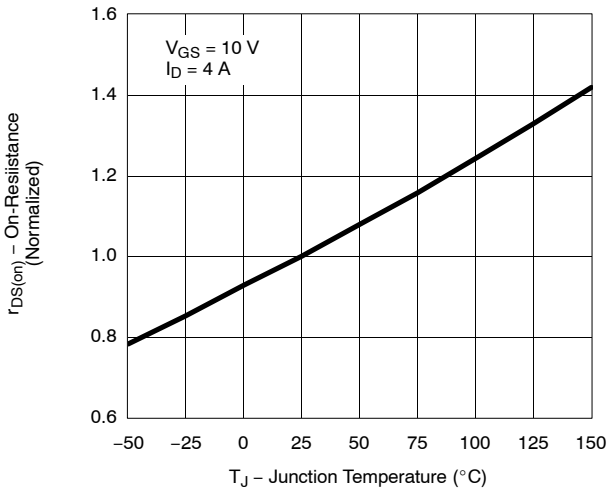
Capacitance



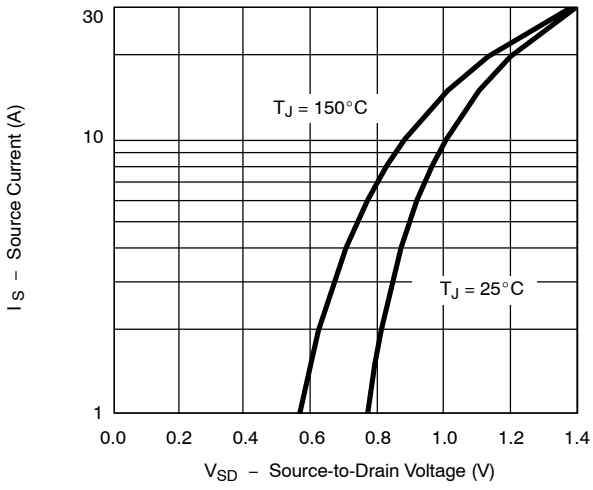
Gate Charge



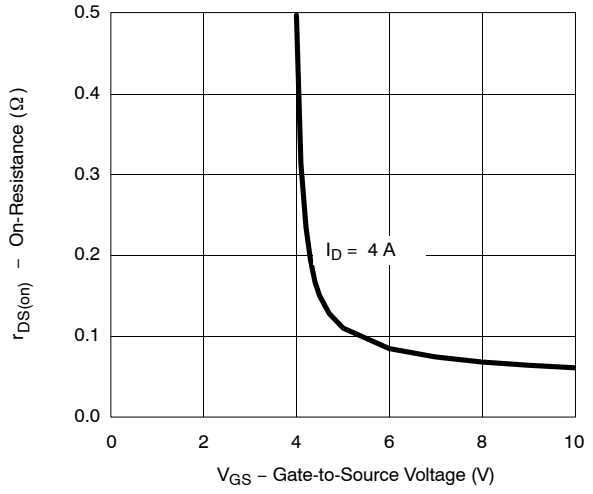
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

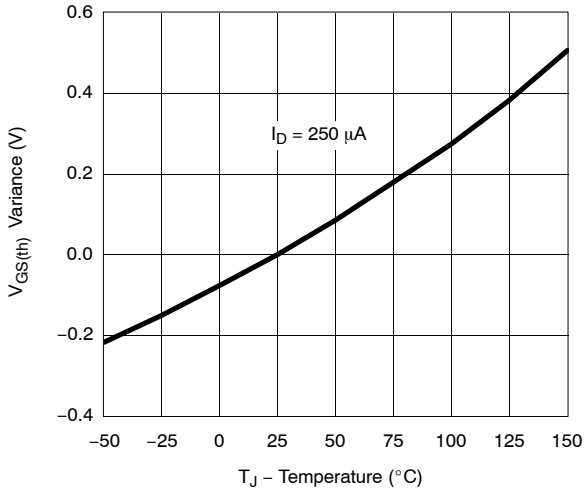


On-Resistance vs. Gate-to-Source Voltage

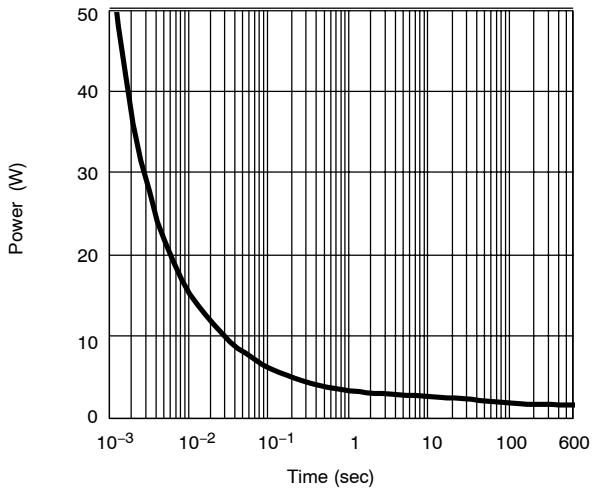


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

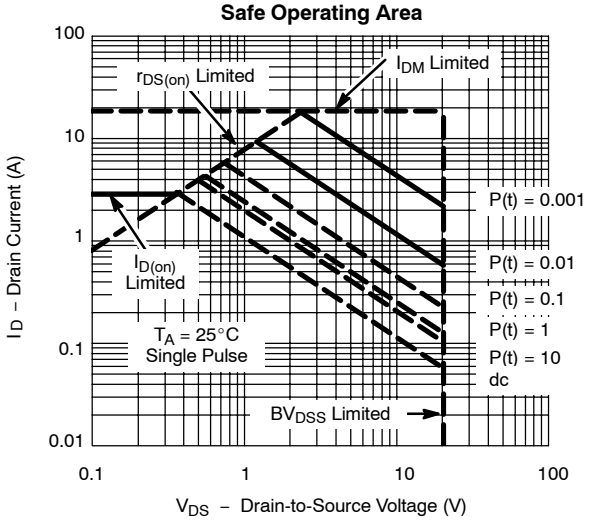
Threshold Voltage



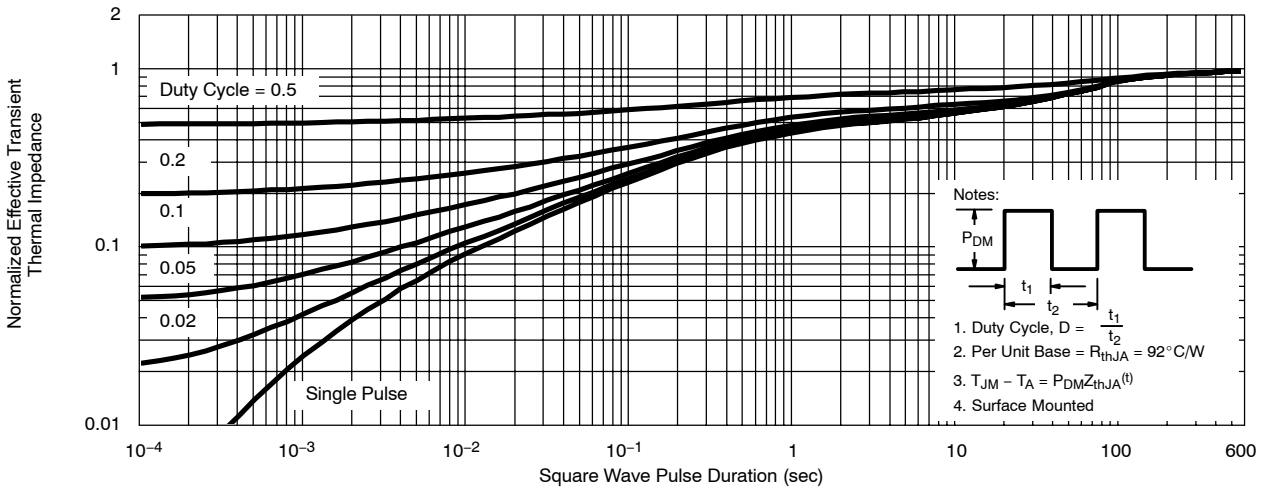
Single Pulse Power



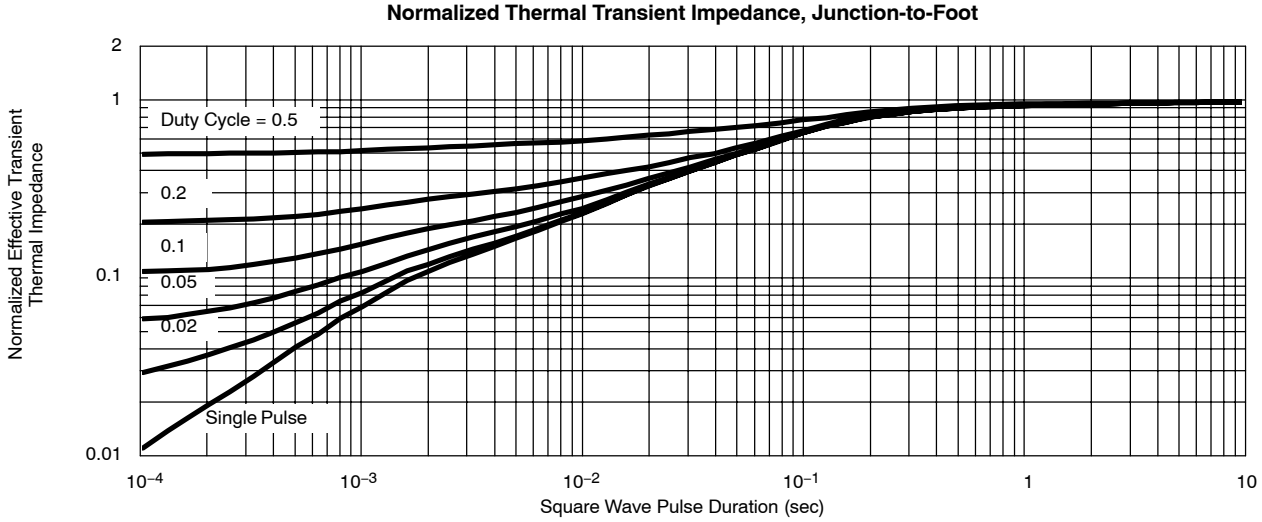
Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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