



P-Channel 150-V (D-S) MOSFET

PRODUCT SUMMARY						
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (A) ^a	Q _g (Typ.)			
- 150	0.75 at V _{GS} = - 10 V	- 1.4	8 nC			
- 150	0.79 at V _{GS} = - 6 V	- 1.3	0110			

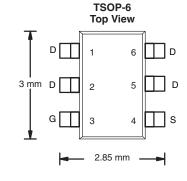
FEATURES

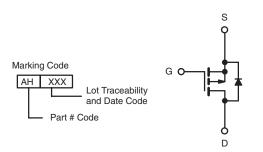
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET[®] Power MOSFET
- 100 % R_g and UIS Tested
- Compliant to RoHS Directive 2002/95/EC



APPLICATIONS

Active Clamp Circuits in DC/DC Power Supplies





Ordering Information: Si3437DV-T1-E3 (Lead (Pb)-free)

Si3437DV-T1-GE3 (Lead (Pb)-free and Halogen-free)

P-Channel MOSFET

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	- 150	V	
Gate-Source Voltage	V _{GS}	± 20	V	
	T _C = 25 °C		- 1.4	
Continuous Drain Current (T _{.1} = 150 °C)	T _C = 70 °C	1 . –	- 1.1	
Continuous Diairi Curient (1) = 150 °C)	T _A = 25 °C	I _D	- 1.1 ^{b,c}	
	T _A = 70 °C		- 0.88 ^{b,c}	Α
Pulsed Drain Current		I _{DM}	- 5	A
Continuous Course Dunin Diada Courset	T _C = 25 °C		- 2.6	
Continuous Source-Drain Diode Current	T _A = 25 °C	I _S	1.6 ^{b,c}	
Avalanche Current	1 0.4 mal 1	I _{AS}	5	
Single-Pulse Avalanche Energy	L = 0.1 mH	E _{AS}	1.25	mJ
	T _C = 25 °C		3.2	
Maximum Dawar Dissination	T _C = 70 °C		2.1	w
Maximum Power Dissipation	T _A = 25 °C	- P _D —	2 ^{b,c}	VV
	T _A = 70 °C	1	1.25 ^{b,c}	
Operating Junction and Storage Temperature Range	T _J , T _{stq}	- 55 to 150	°C	

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{b, d}	t ≤ 5 s	R _{thJA}	51	62.5	°C/W	
Maximum Junction-to-Foot	Steady State	R_{thJF}	32	39	- C/VV	

Notes:

- a. $T_C = 25$ °C.
- b. Surface Mounted on 1" x 1" FR4 board.
- c. t = 5 s
- d. Maximum under Steady State conditions is 110 $^{\circ}\text{C/W}.$



Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static	-					I	
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V, I}_{D} = -250 \mu\text{A}$	- 150			V	
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	J 050 A		- 160			
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	I _D = - 250 μA		5.5		mV/°C	
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = -250 \mu\text{A}$	- 2		- 4	V	
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zava Cata Valtana Dunin Communi	I _{DSS}	V _{DS} = - 150 V, V _{GS} = 0 V			- 1		
Zero Gate Voltage Drain Current		V _{DS} = - 150 V, V _{GS} = 0 V, T _J = 55 °C			- 10	μΑ	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge -10 \text{ V}, V_{GS} = -10 \text{ V}$	- 3			Α	
Durin Course On Otata Basistana a	D	V _{GS} = - 10 V, I _D = - 1.4 A		0.61	0.75	Ω	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 6 V, I _D = - 1 A		0.64	0.79		
Forward Transconductance ^a	9 _{fs}	V _{DS} = - 10 V, I _D = - 1.4 A		4.5		S	
Dynamic ^b							
Input Capacitance	C _{iss}			510			
Output Capacitance	C _{oss}	$V_{DS} = -50 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		30		pF	
Reverse Transfer Capacitance	C _{rss}			21			
Tatal Cata Chausa	Q _g	$V_{DS} = -75 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -1 \text{ A}$		12.2	19	nC	
Total Gate Charge				8	12		
Gate-Source Charge		$V_{DS} = -75 \text{ V}, V_{GS} = -6 \text{ V}, I_{D} = -1 \text{ A}$		2.1			
Gate-Drain Charge	Q _{gd}			3.9			
Gate Resistance	R_g	f = 1 MHz		8.5	13	Ω	
Turn-On Delay Time	t _{d(on)}			9	15		
Rise Time	t _r	$V_{DD} = -75 \text{ V}, R_{L} = 75 \Omega$		11	18		
Turn-Off DelayTime	t _{d(off)}	$I_D \cong$ - 1 A, V_{GEN} = - 10 V, R_g = 1 Ω		28	42		
Fall Time	t _f			12	18	- ns	
Turn-On Delay Time	t _{d(on)}			14	21		
Rise Time	t _r	$V_{DD} = -75 \text{ V}, R_{L} = 75 \Omega$		29	44		
rn-Off DelayTime t _{d(off)}		$I_D \cong -1 \text{ A}, V_{GEN} = -6 \text{ V}, R_g = 1 \Omega$		23	35	1	
Fall Time	t _f	_		14	21		
Drain-Source Body Diode Characteris	tics		•				
Continous Source-Drain Diode Current	I _S	T _C = 25 °C			- 1.4	^	
Pulse Diode Forward Current	I _{SM}				- 5	Α	
Body Diode Voltage	V _{SD}	I _S = - 1 A, V _{GS} = 0 V		- 0.8	- 1.2	V	
Body Diode Reverse Recovery Time	t _{rr}			60	90	ns	
Body Diode Reverse Recovery Charge	Q _{rr}	I _F = - 1.2 A, dl/dt = 100 A/μs, T _{.I} = 25 °C		120	180	nC	
Reverse Recovery Fall Time	t _a	$I_{F} = -1.2 \text{ A}$, $I_{I} = 100 \text{ A/}\mu\text{S}$, $I_{J} = 25 \text{ C}$		35		no	
Reverse Recovery Rise Time	t _b			25		ns	

Notes:

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

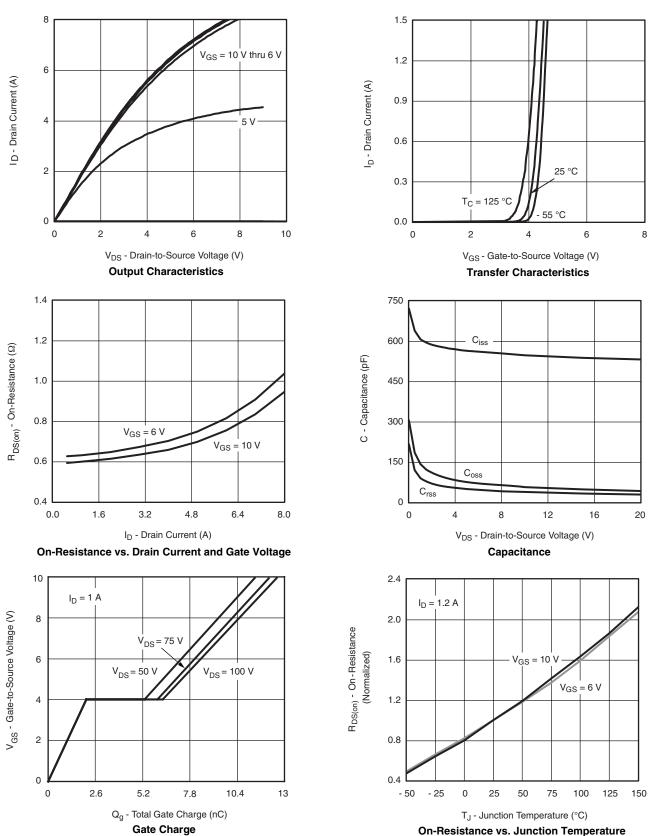
a. Pulse test; pulse width \leq 300 $\mu s,$ duty cycle \leq 2 %.

b. Guaranteed by design, not subject to production testing.



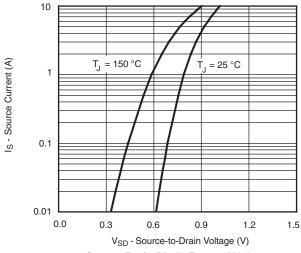


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

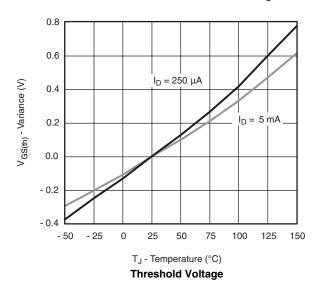


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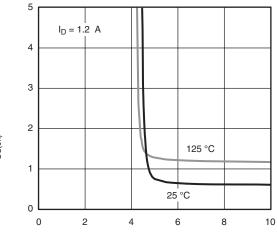
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



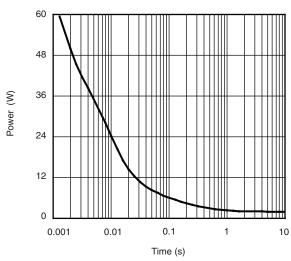
Source-Drain Diode Forward Voltage



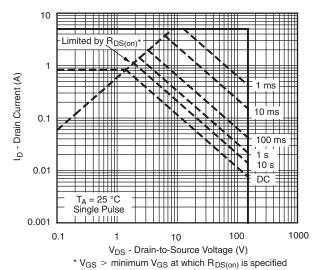
R_{DS(on)} - Drain-to-Source (᠒)



 $\label{eq:VGS} \mbox{$V_{\rm GS}$ - Gate-to-Source Voltage (V)} \\$ On-Resistance vs. Gate-to-Source Temperature

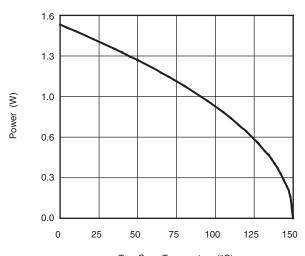


Single Pulse Power, Junction-to-Ambient



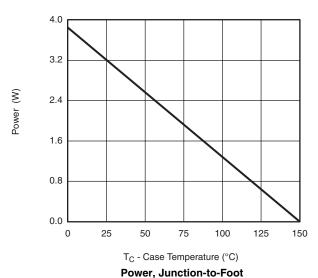
Safe Operating Area, Junction-to-Ambient

MOSFET TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

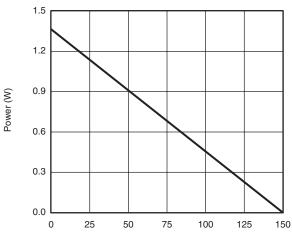


T_C - Case Temperature (°C)

Current Derating*







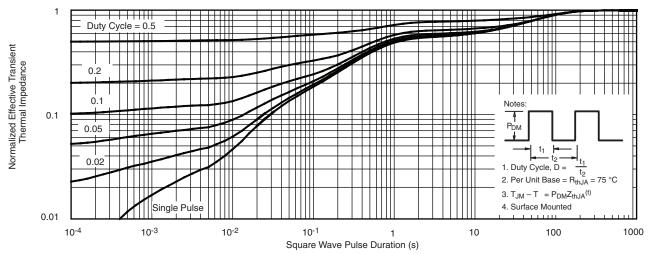
T_A - Ambient Temperature (°C)

Power Derating, Junction-to-Ambient

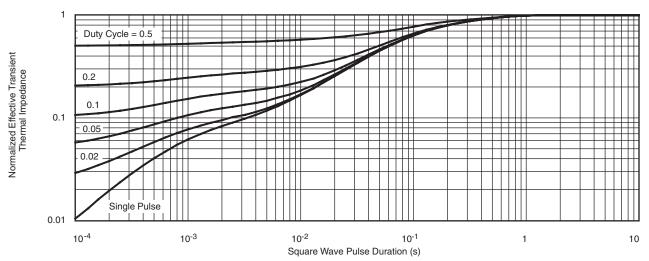
^{*} The power dissipation P_D is based on $T_{J(max)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package



TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

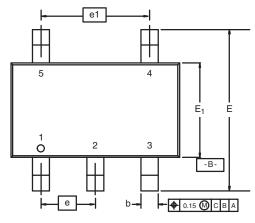
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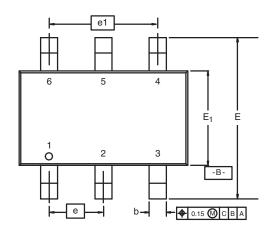




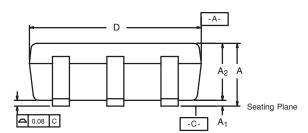
TSOP: 5/6-LEAD

JEDEC Part Number: MO-193C

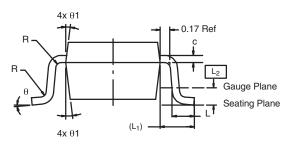




5-LEAD TSOP





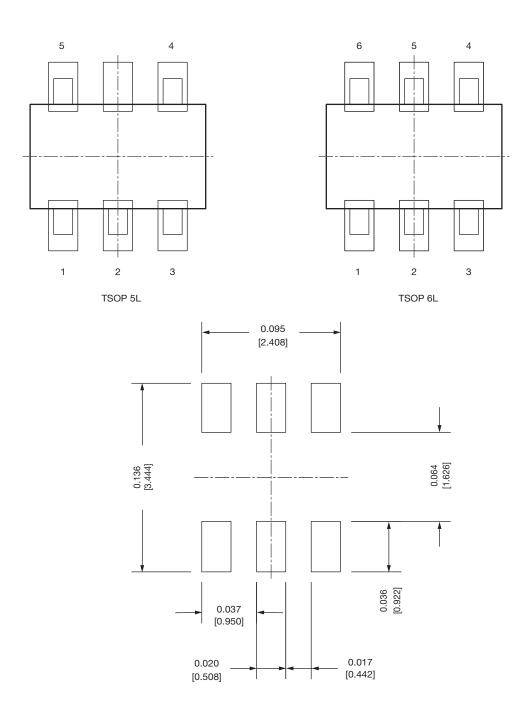


	MIL	LIMETER	RS	INCHES			
Dim	Min	Nom	Max	Min	Nom	Max	
Α	0.91	-	1.10	0.036	-	0.043	
A ₁	0.01	-	0.10	0.0004	-	0.004	
A ₂	0.90	-	1.00	0.035	0.038	0.039	
b	0.30	0.32	0.45	0.012	0.013	0.018	
С	0.10	0.15	0.20	0.004	0.008		
D	2.95	3.05	3.10	0.116 0.120		0.122	
E	2.70	2.85	2.98	0.106	0.112	0.117	
E ₁	1.55	1.65	1.70	0.061	0.065	0.067	
е	0.95 BSC			0.0374 BSC			
e ₁	1.80	1.90	2.00	0.071	0.079		
L	0.32	-	0.50	0.012	-	0.020	
L ₁	0.60 Ref			0.024 Ref			
L ₂	0.25 BSC			0.010 BSC			
R	0.10	-	-	0.004	-	-	
θ	0°	4°	8°	0°	4°	8°	
θ1	7° Nom			7° Nom			
ECN: C-06593-Rev. I, 18-Dec-06 DWG: 5540							

Document Number: 71200 18-Dec-06



Recommended Land Pattern For TSOP-5L / TSOP-6L



Note

• All dimensions are in inches (millimeter)

ECN: C22-0860-Rev. B, 24-Oct-2022 DWG: 3010



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