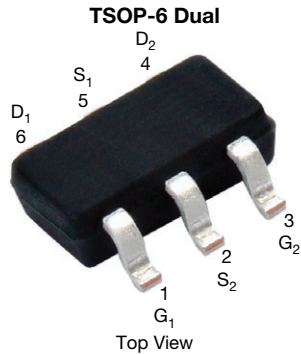


N- and P-Channel 30 V (D-S) MOSFET

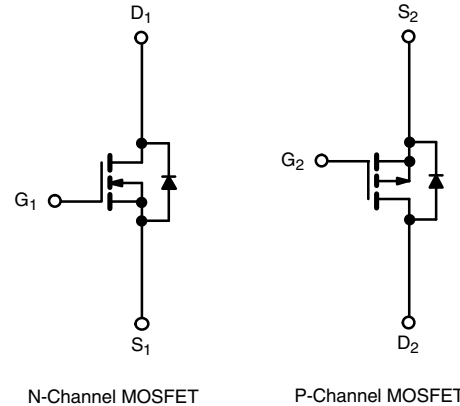


FEATURES

- TrenchFET® power MOSFET
- 100 % R_g tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
Available



PRODUCT SUMMARY		
	N-CHANNEL	P-CHANNEL
V _{DS} (V)	30	-30
R _{DS(on)} (Ω) at V _{GS} = ± 10 V	0.105	0.200
R _{DS(on)} (Ω) at V _{GS} = ± 4.5 V	0.175	0.360
Q _g typ. (nC)	2.1	2.4
I _D (A) ^a	2.5	-1.8
Configuration	N- and p-pair	

ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free	Si3552DV-T1-E3
Lead (Pb)-free and halogen-free	Si3552DV-T1-GE3

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)					
PARAMETER	SYMBOL	N-CHANNEL	P-CHANNEL	UNIT	
Drain-source voltage	V _{DS}	30	-30	V	
Gate-source voltage	V _{GS}	± 20	± 20		
Continuous drain current (T _J = 150 °C) ^{a, b}	I _D	T _A = 25 °C	2.5	-1.8	A
		T _A = 70 °C	2	-1.2	
Pulsed drain current	I _{DM}	8	-7		
Continuous source current (diode conduction) ^{a, b}	I _S	1.05	-1.05		
maximum power dissipation ^{a, b}	P _D	T _A = 25 °C	1.15		W
		T _A = 70 °C	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	R _{thJA}	t ≤ 5 s	93	110	°C/W
		Steady state	130	150	
Maximum junction-to-lead	R _{thJL}	75	90		

Notes

- a. Surface mounted on FR4 board
b. t ≤ 5 s



SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT	
Static								
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	1	-	-	V	
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-1	-	-		
Gate-body leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	N-Ch	-	-	± 100	nA	
			P-Ch	-	-	± 100		
Zero gate voltage drain current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V	N-Ch	-	-	1	μA	
			P-Ch	-	-	-1		
			V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55 °C	N-Ch	-	-		5
			V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55 °C	P-Ch	-	-		-5
On-state drain current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	N-Ch	5	-	-	A	
			V _{DS} = -5 V, V _{GS} = -10 V	P-Ch	-5	-		-
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 2.5 A	N-Ch	-	0.085	0.105	Ω	
			V _{GS} = -10 V, I _D = -1.8 A	P-Ch	-	0.165		0.200
			V _{GS} = 4.5 V, I _D = 2 A	N-Ch	-	0.140		0.175
			V _{GS} = -4.5 V, I _D = -1.2 A	P-Ch	-	0.298		0.360
Forward transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 2.5 A	N-Ch	-	4.3	-	S	
			V _{DS} = -15 V, I _D = -1.8 A	P-Ch	-	2.4		-
Diode forward voltage ^a	V _{SD}	I _S = 1.05 A, V _{GS} = 0 V	N-Ch	-	0.81	1.1	V	
		I _S = -1.05 A, V _{GS} = 0 V	P-Ch	-	-0.83	-1.1		
Dynamic ^b								
Total gate charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 5 V, I _D = 1.8 A P-Channel V _{DS} = -15 V, V _{GS} = -5 V, I _D = -1.8 A	N-Ch	-	2.1	3.2	nC	
			P-Ch	-	2.4	3.6		
Gate-source charge	Q _{gs}		N-Ch	-	0.7	-		
			P-Ch	-	0.9	-		
Gate-drain charge	Q _{gd}		N-Ch	-	0.7	-		
			P-Ch	-	0.8	-		
Gate resistance	R _g	N-Ch	0.5	-	2.4	Ω		
		P-Ch	3	-	11			
Turn-on delay time	t _{d(on)}	N-Channel V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _g = 6 Ω P-Channel V _{DD} = -15 V, R _L = 15 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _g = 6 Ω	N-Ch	-	7	11	ns	
			P-Ch	-	8	12		
Rise time	t _r		N-Ch	-	9	14		
			P-Ch	-	12	18		
Turn-off delay time	t _{d(off)}		N-Ch	-	13	20		
			P-Ch	-	12	18		
Fall time	t _f		N-Ch	-	5	8		
			P-Ch	-	7	11		
Source-drain reverse recovery time	t _{rr}	I _F = 1.05 A, di/dt = 100 A/μs	N-Ch	-	35	60		
		I _F = -1.05 A, di/dt = 100 A/μs	P-Ch	-	30	60		

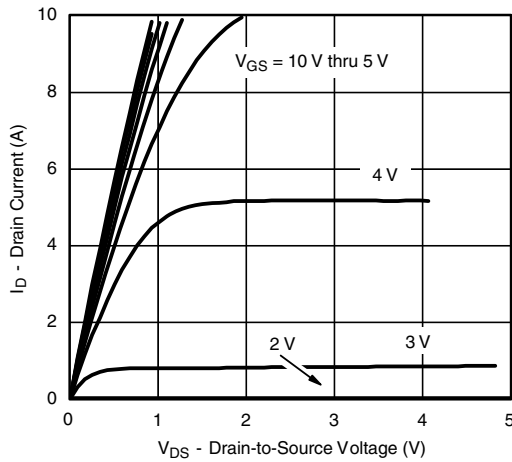
Notes

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

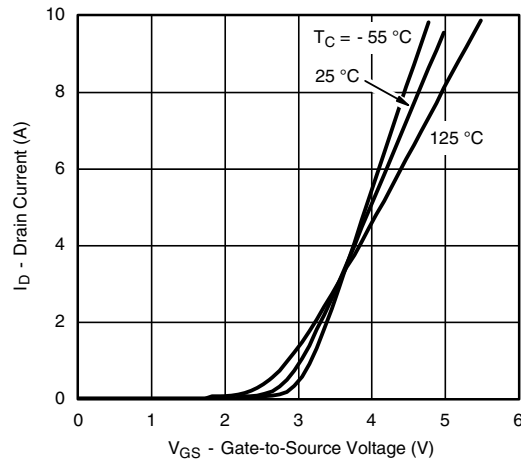
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



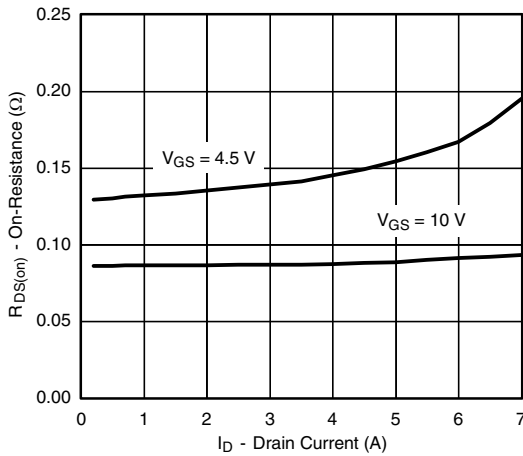
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



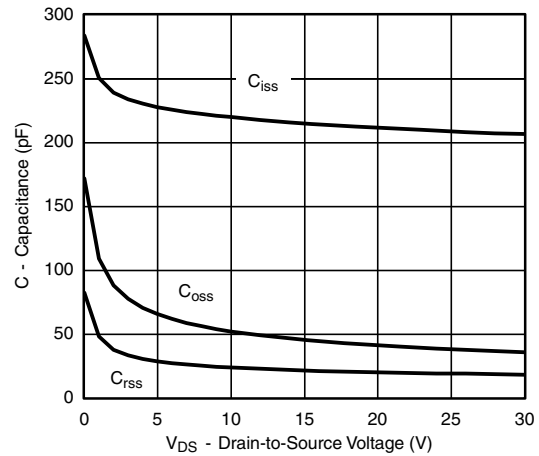
Output Characteristics



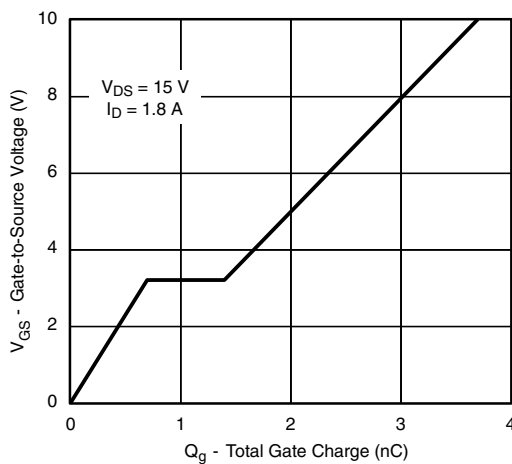
Transfer Characteristics



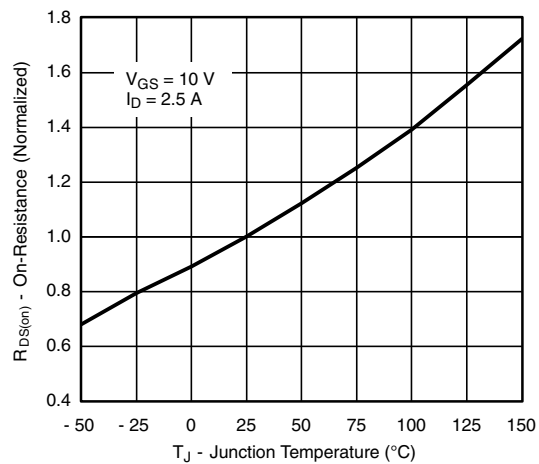
On-Resistance vs. Drain Current



Capacitance



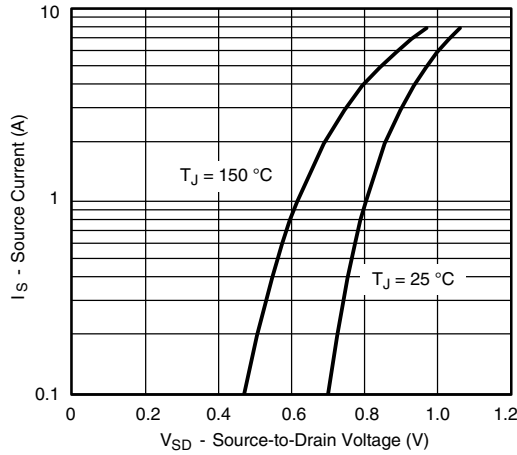
Gate Charge



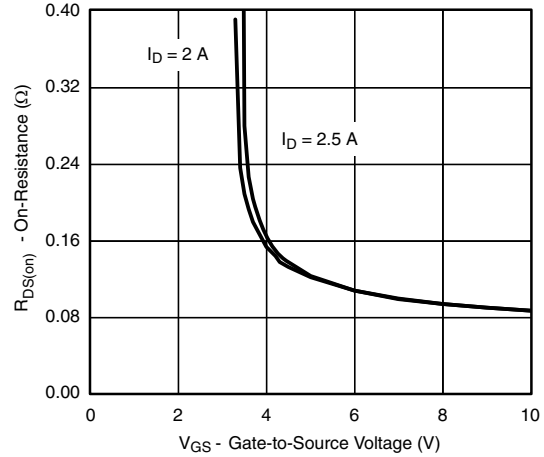
On-Resistance vs. Junction Temperature



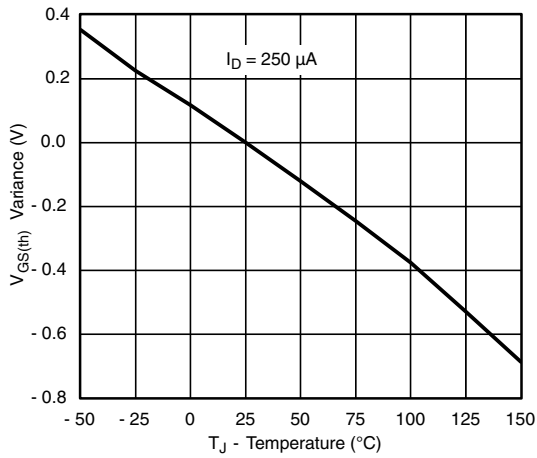
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



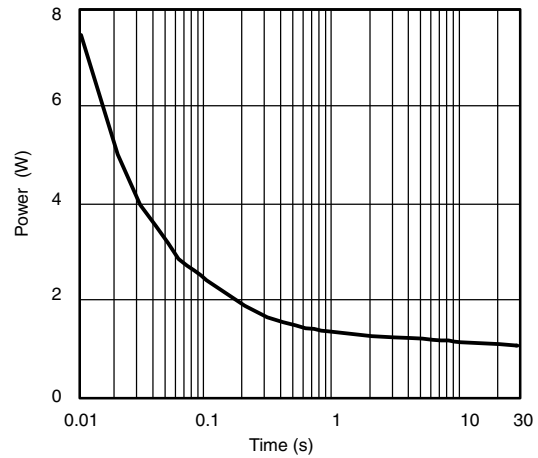
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



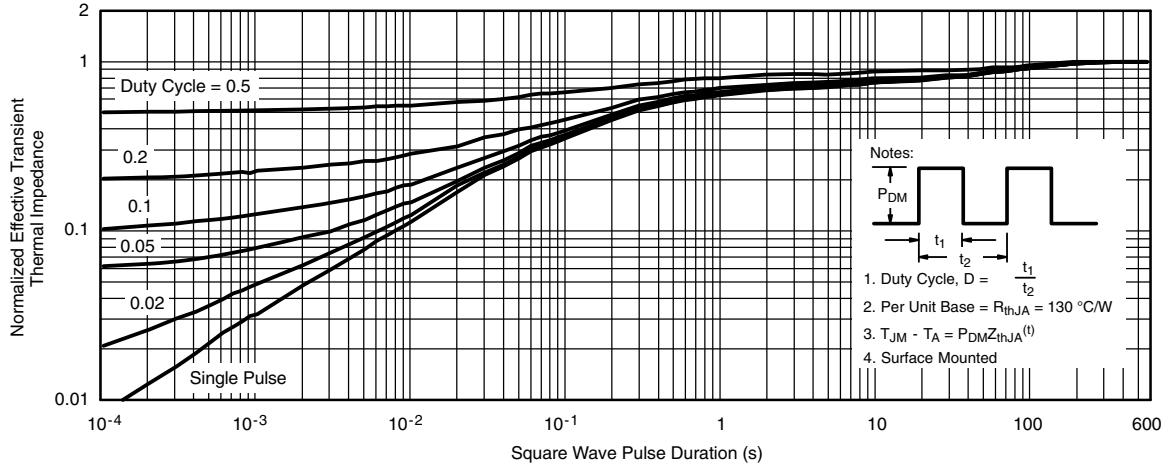
Threshold Voltage



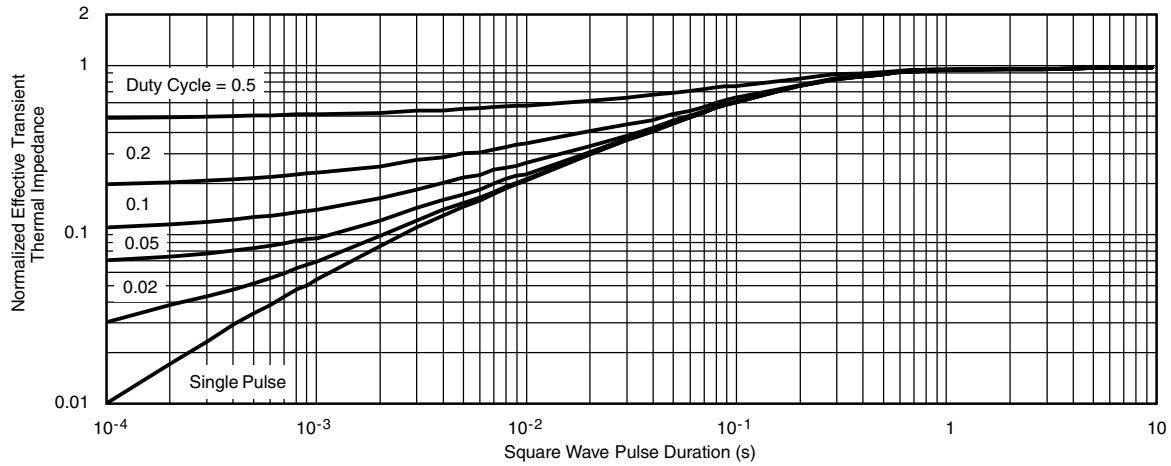
Single Pulse Power (Junction-to-Ambient)



N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



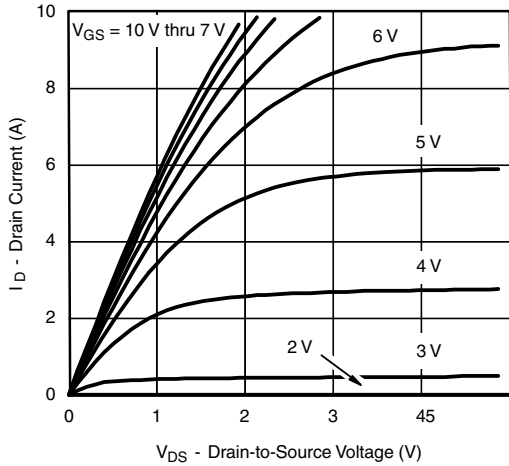
Normalized Thermal Transient Impedance, Junction-to-Ambient



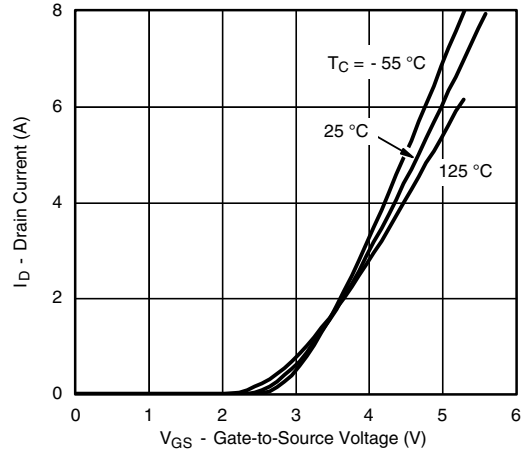
Normalized Thermal Transient Impedance, Junction-to-Foot



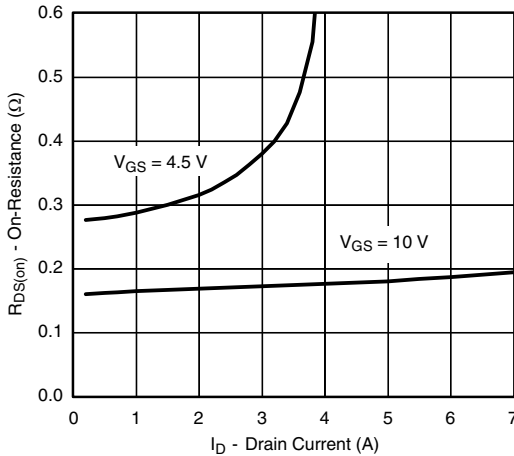
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



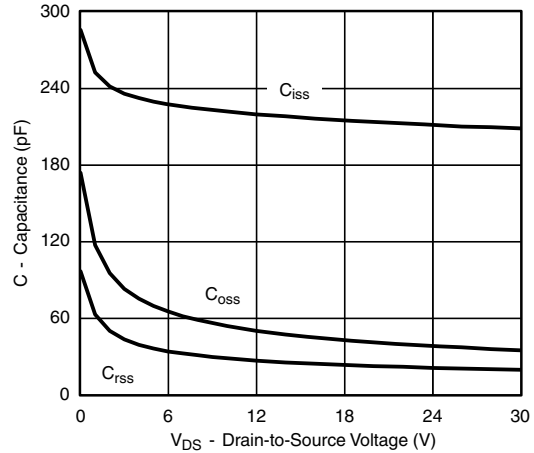
Output Characteristics



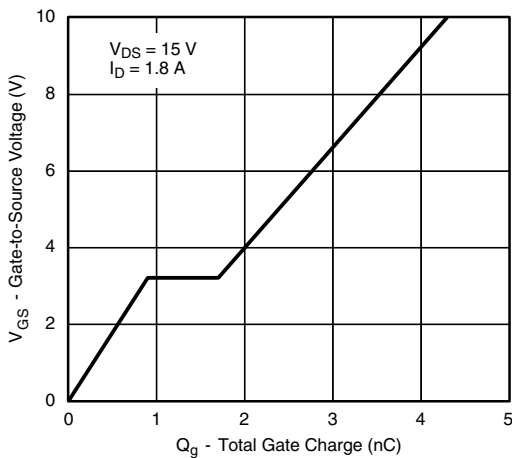
Transfer Characteristics



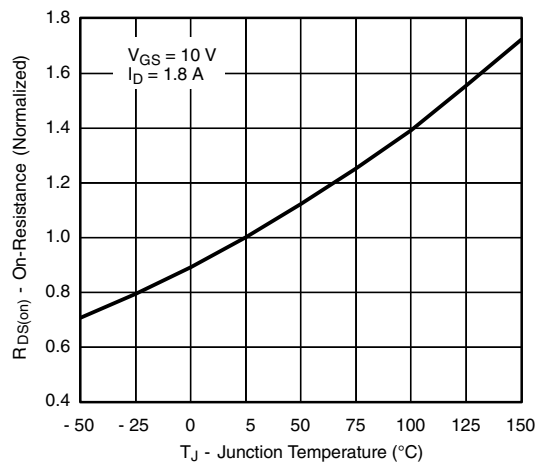
On-Resistance vs. Drain Current



Capacitance



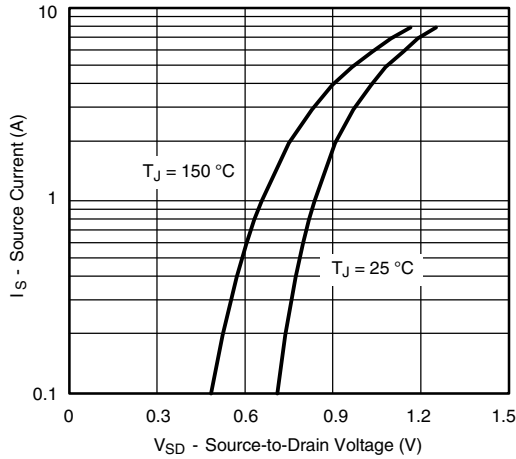
Gate Charge



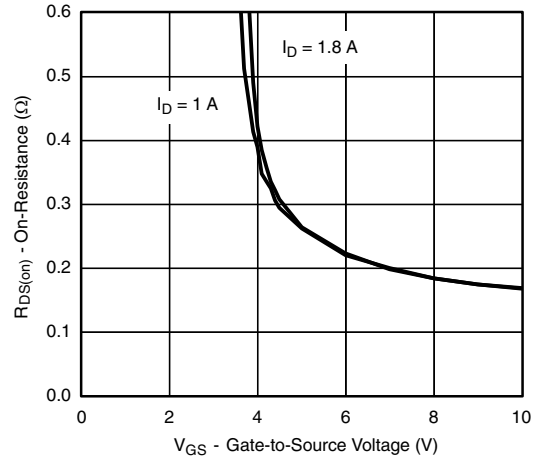
On-Resistance vs. Junction Temperature



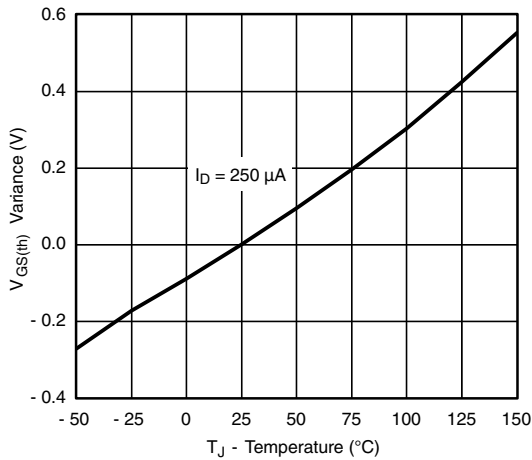
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



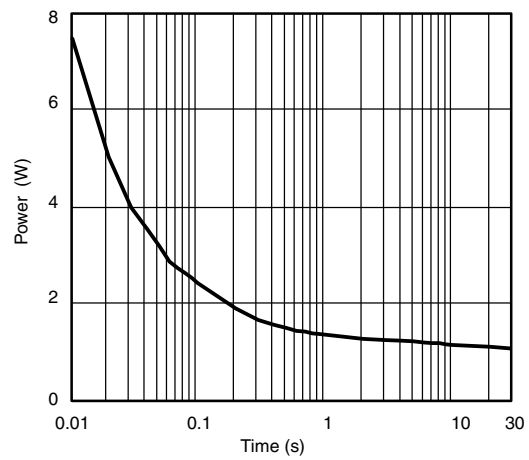
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

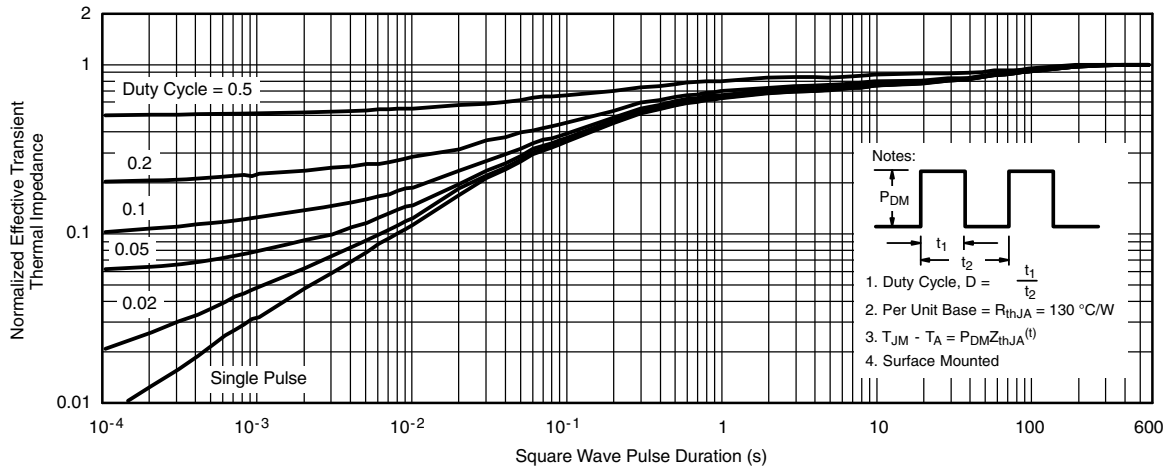


Threshold Voltage

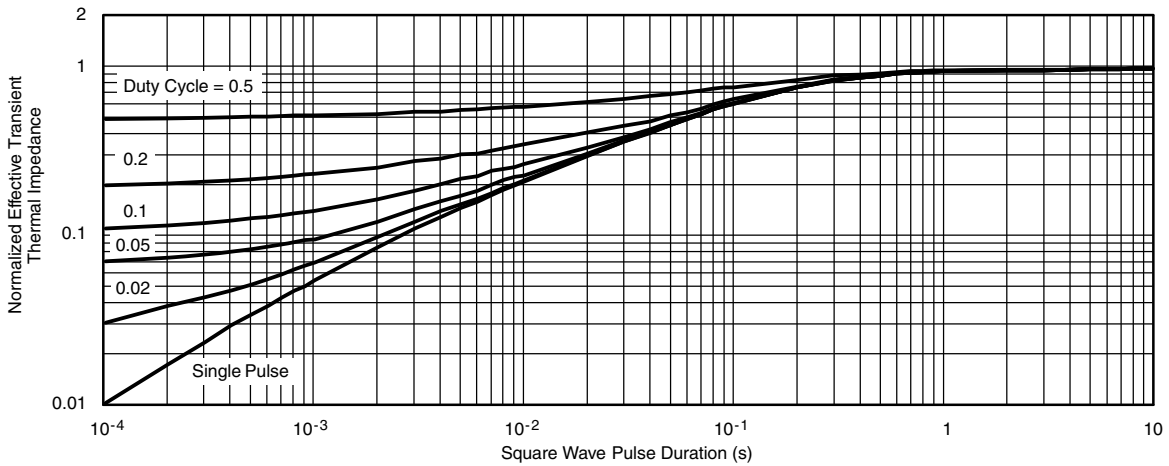


Single Pulse Power (Junction-to-Ambient)

P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



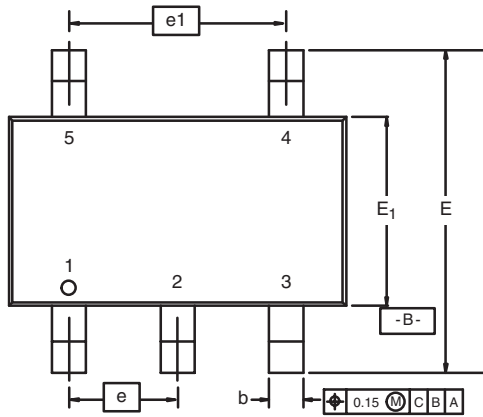
Normalized Thermal Transient Impedance, Junction-to-Foot

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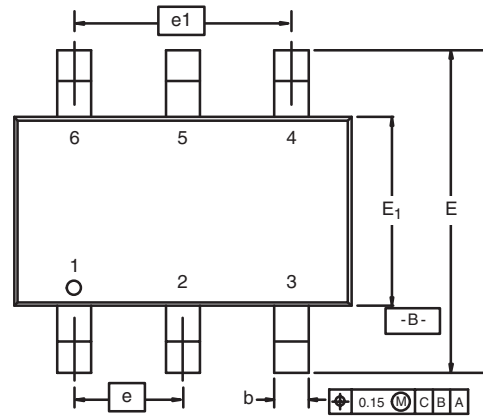


TSOP: 5/6-LEAD

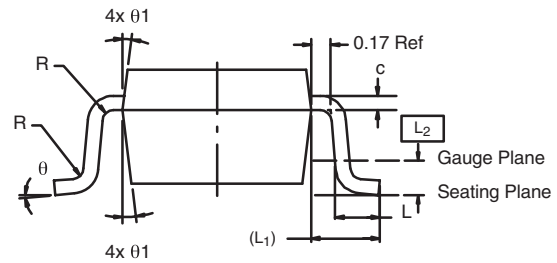
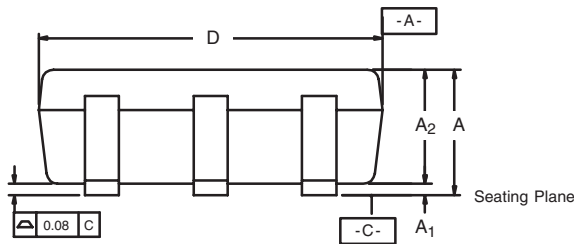
JEDEC Part Number: MO-193C



5-LEAD TSOP



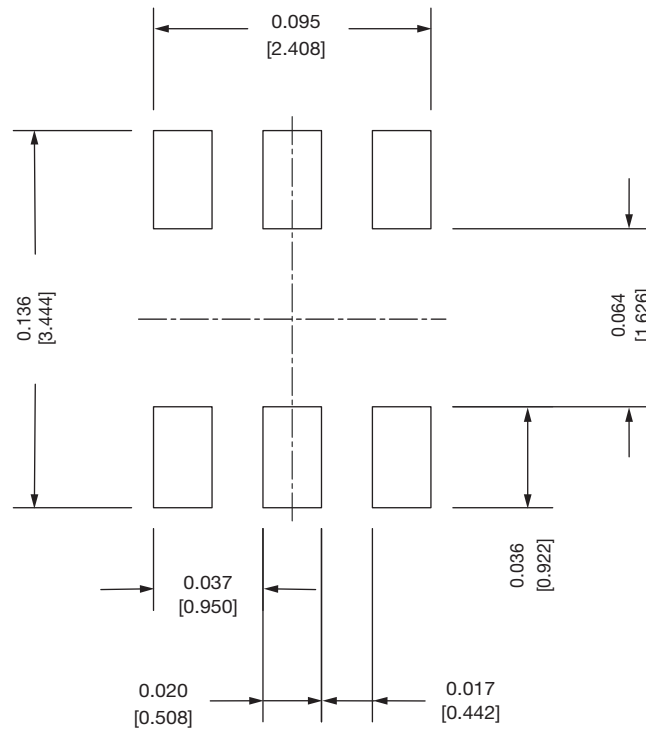
6-LEAD TSOP



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	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
c	0.10	0.15	0.20	0.004	0.006	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
e	0.95 BSC			0.0374 BSC		
e ₁	1.80	1.90	2.00	0.071	0.075	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°
θ ₁	7° Nom			7° Nom		
ECN: C-06593-Rev. I, 18-Dec-06						
DWG: 5540						



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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