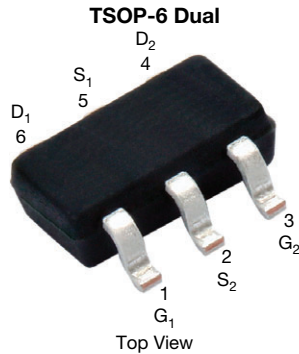


N- and P-Channel 30 V (D-S) MOSFET

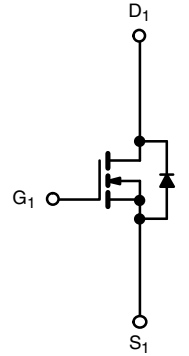


FEATURES

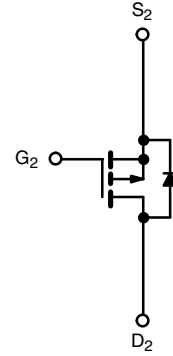
- TrenchFET® power MOSFET
- 100 % R_g tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
Available



N-Channel MOSFET



P-Channel MOSFET

PRODUCT SUMMARY

	N-CHANNEL	P-CHANNEL
V_{DS} (V)	30	-30
$R_{DS(on)}$ (Ω) at $V_{GS} = \pm 10$ V	0.105	0.200
$R_{DS(on)}$ (Ω) at $V_{GS} = \pm 4.5$ 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 ($T_A = 25^\circ\text{C}$, 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 ($T_J = 150\text{ }^{\circ}\text{C}$) a, b	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	2.5	-1.8	A
	$T_A = 70\text{ }^{\circ}\text{C}$		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	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	1.15		W
	$T_A = 70\text{ }^{\circ}\text{C}$		0.73		
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 ^a	R_{thJA}	93	110	$^\circ\text{C/W}$
		130	150	
Maximum junction-to-lead	R_{thJL}	75	90	

Notes

- a. Surface mounted on FR4 board
b. $t \leq 5$ 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
		V _{DS} = -24 V, V _{GS} = 0 V	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
Gate-source charge	Q _{gs}		P-Ch	-	2.4	3.6	
			N-Ch	-	0.7	-	
Gate-drain charge	Q _{gd}		P-Ch	-	0.9	-	
			N-Ch	-	0.7	-	
			P-Ch	-	0.8	-	
Gate resistance	R _g	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	0.5	-	2.4	Ω
			P-Ch	3	-	11	
Turn-on delay time	t _{d(on)}		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	

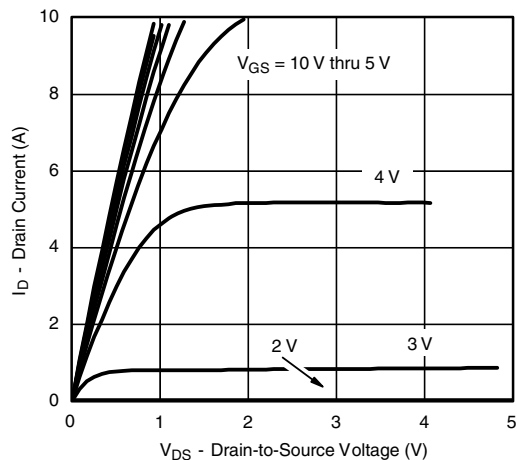
Notes

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

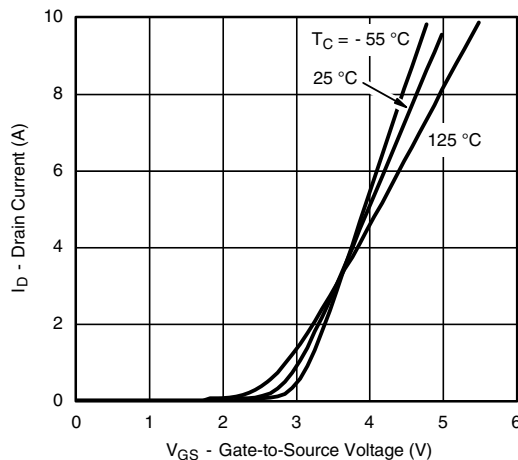
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



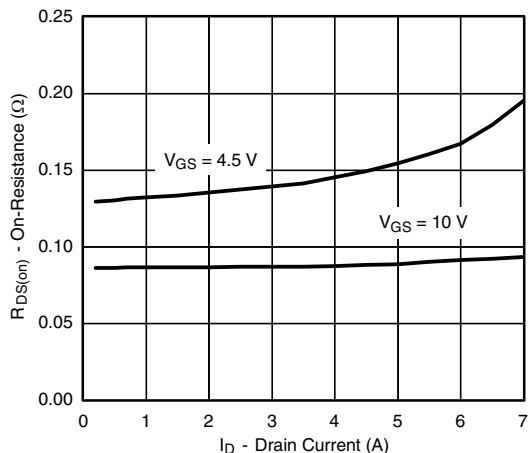
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



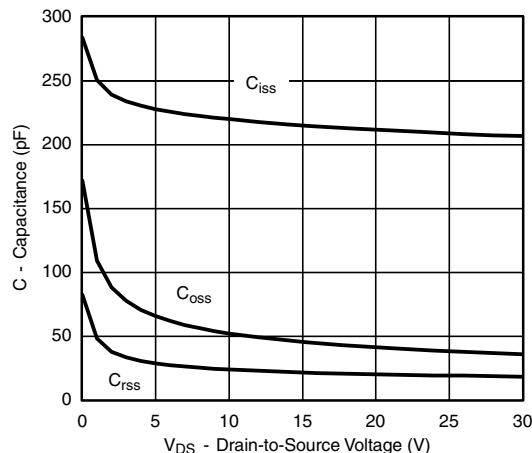
Output Characteristics



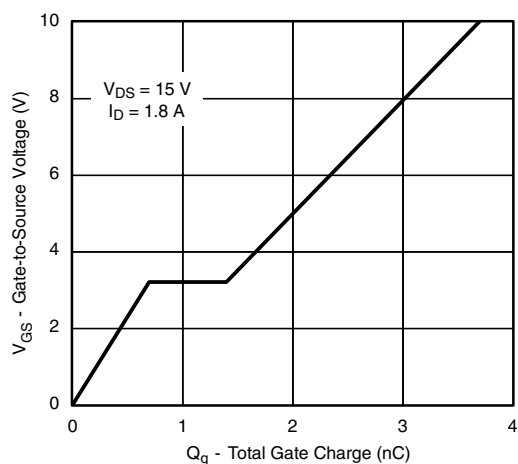
Transfer Characteristics



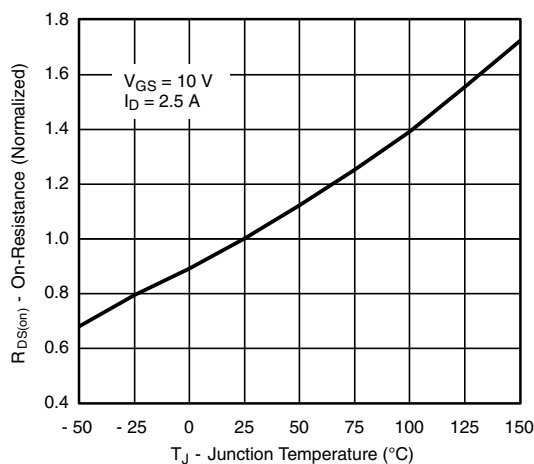
On-Resistance vs. Drain Current



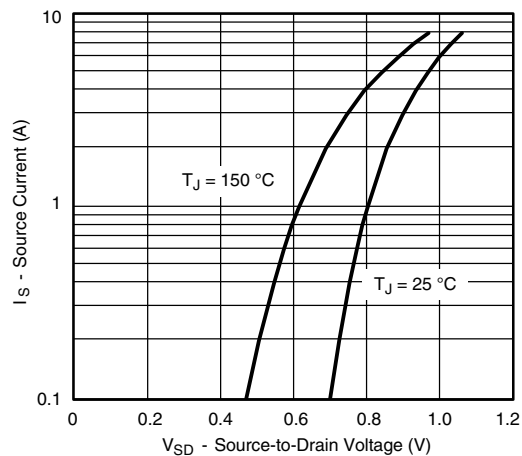
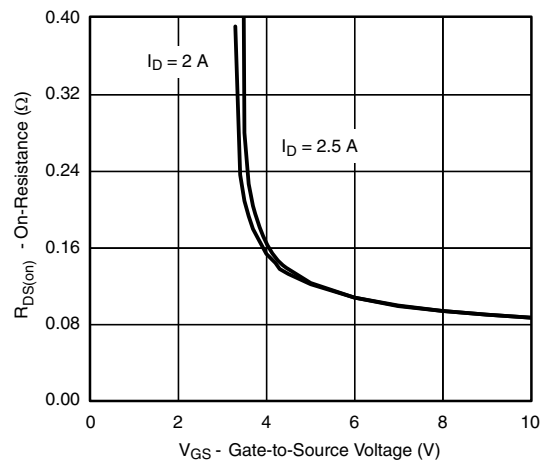
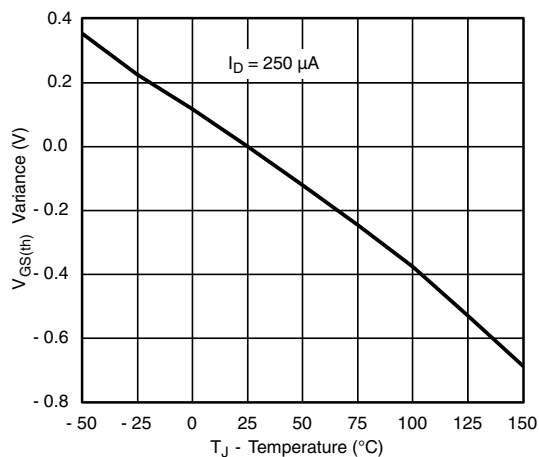
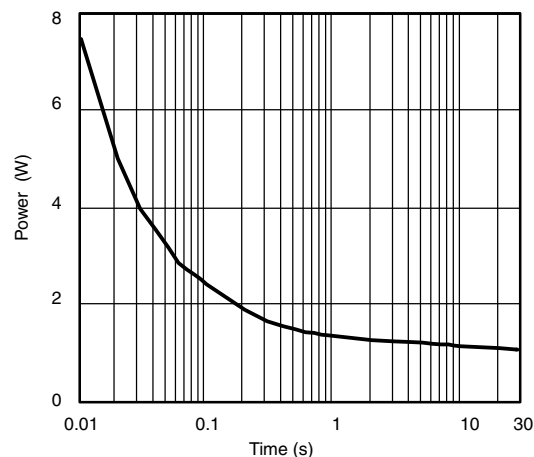
Capacitance



Gate Charge

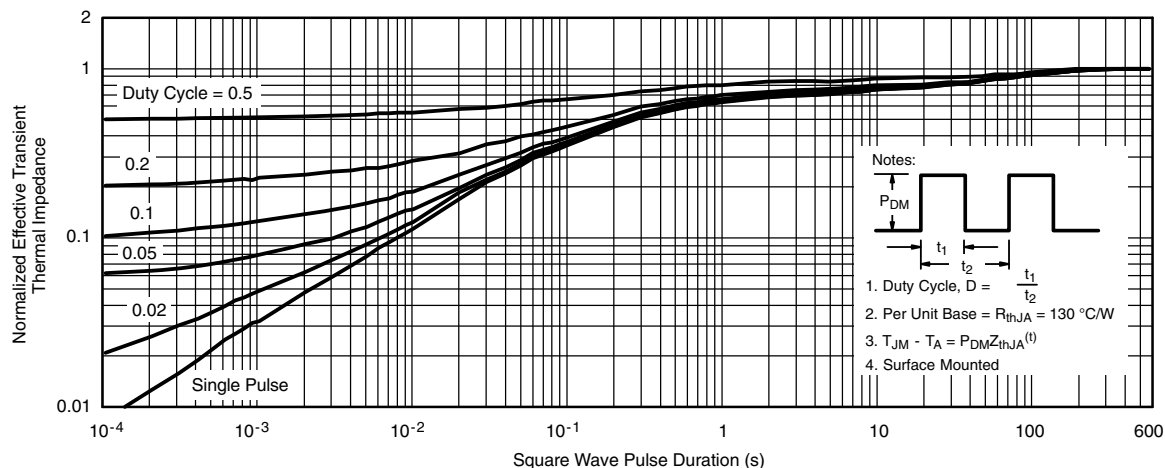


On-Resistance vs. Junction Temperature

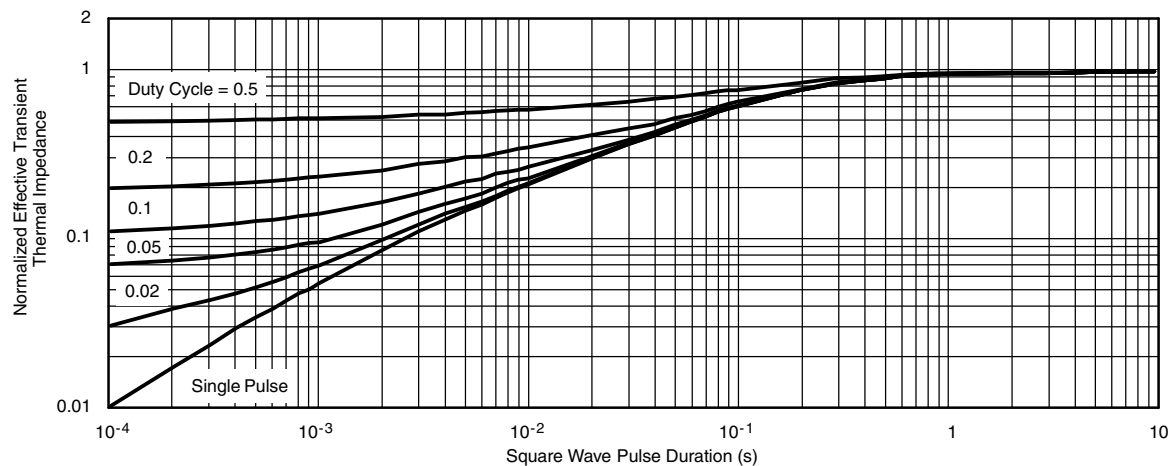
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

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)



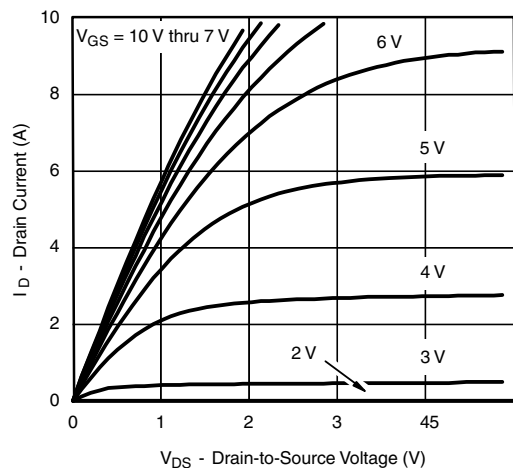
Normalized Thermal Transient Impedance, Junction-to-Ambient



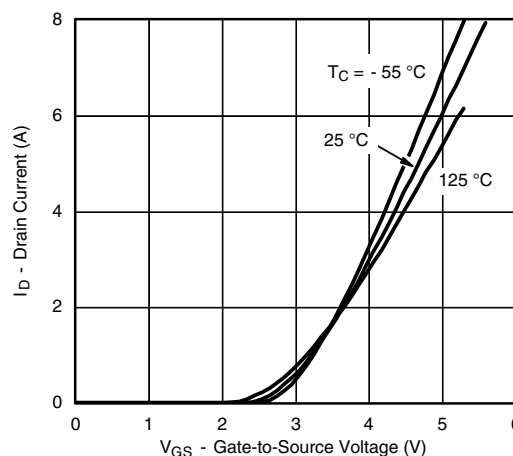
Normalized Thermal Transient Impedance, Junction-to-Foot



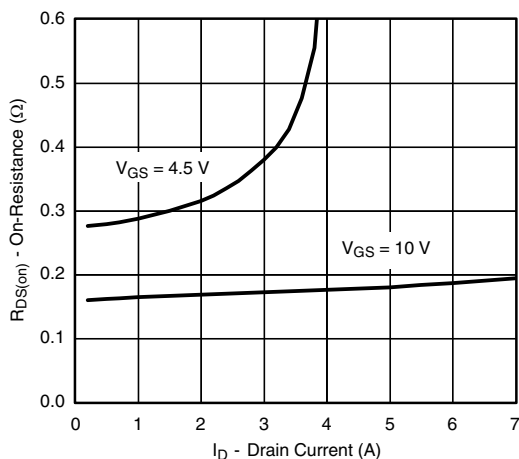
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



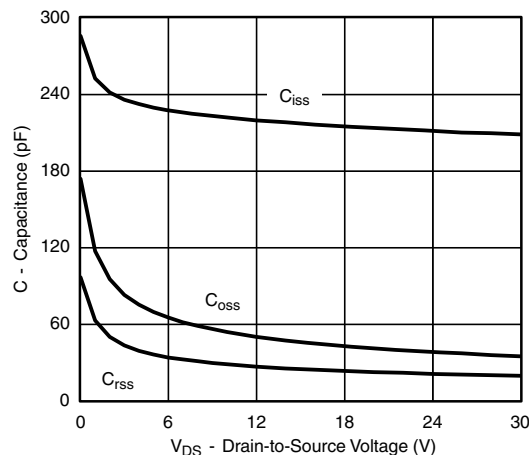
Output Characteristics



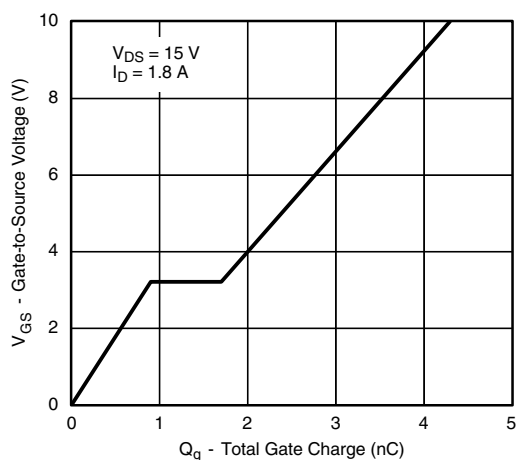
Transfer Characteristics



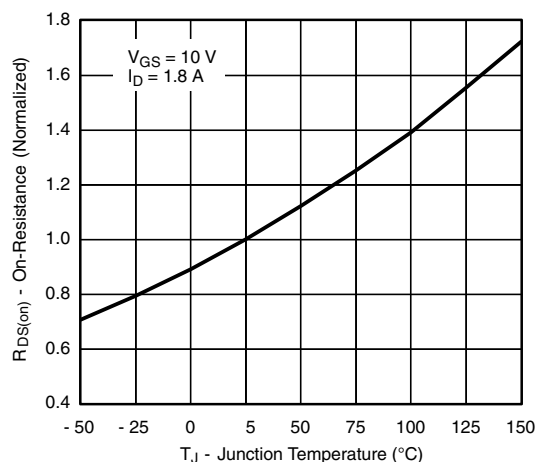
On-Resistance vs. Drain Current



Capacitance



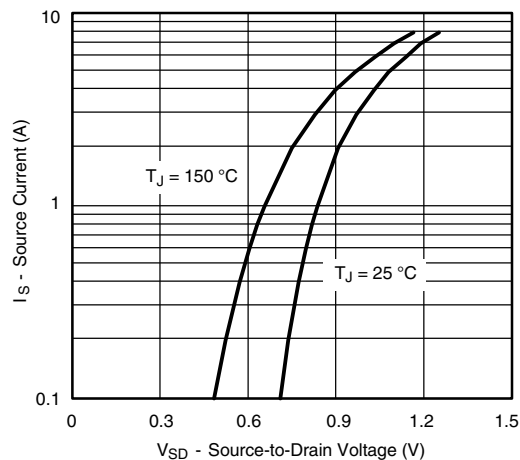
Gate Charge



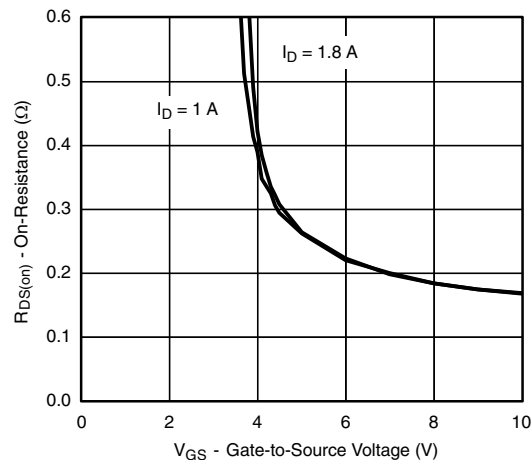
On-Resistance vs. Junction Temperature



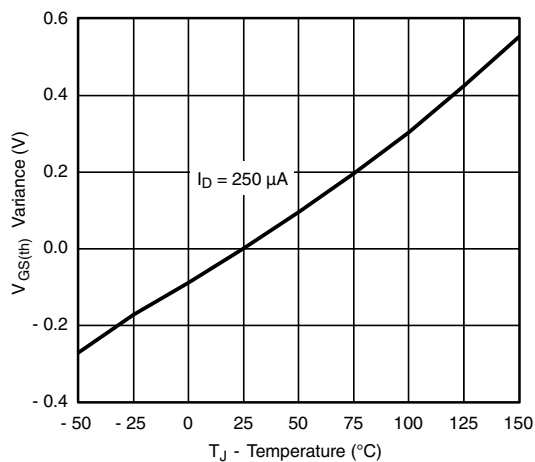
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



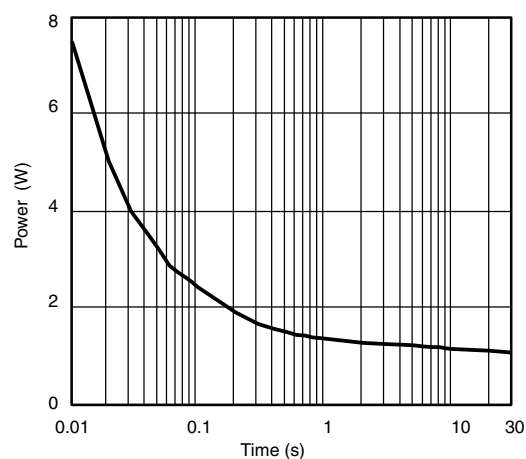
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



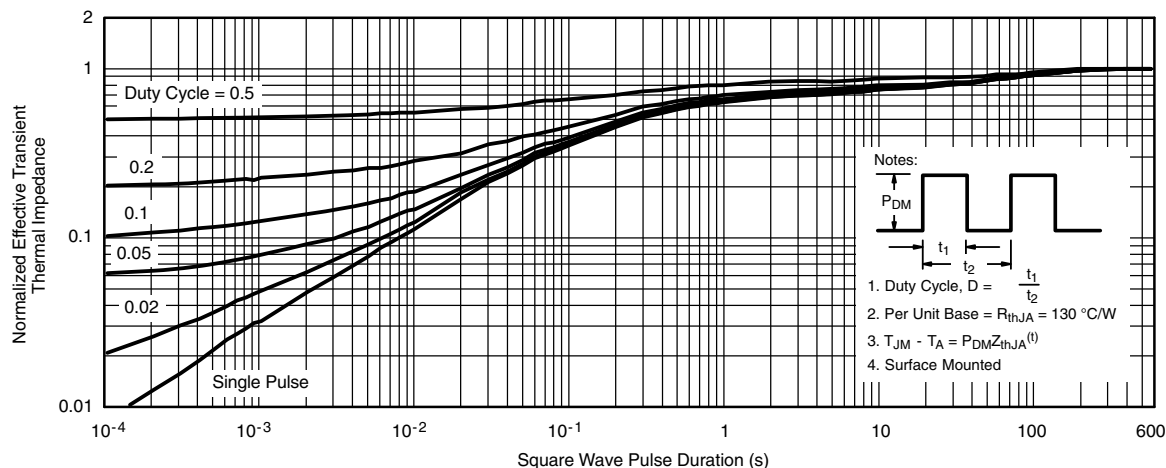
Threshold Voltage



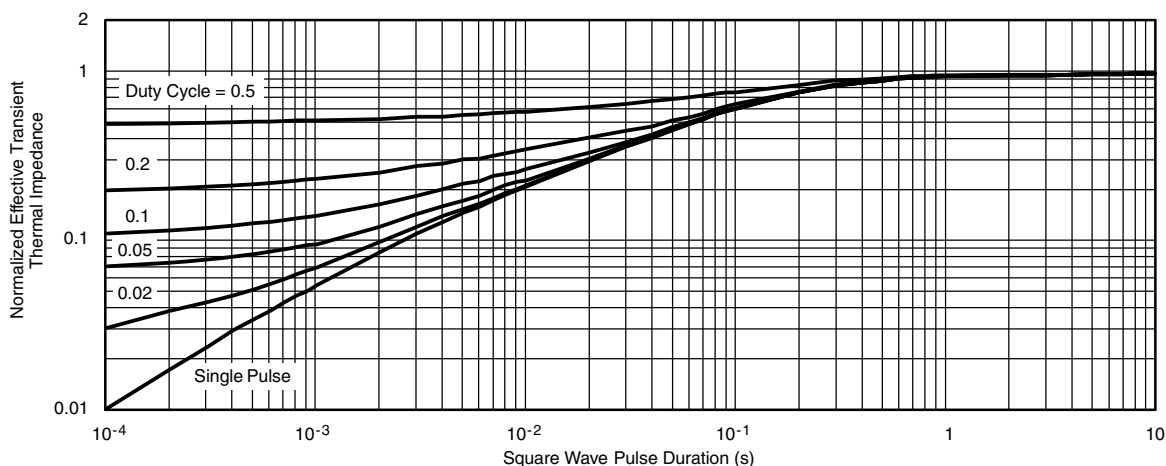
Single Pulse Power (Junction-to-Ambient)



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



Normalized Thermal Transient Impedance, Junction-to-Ambient

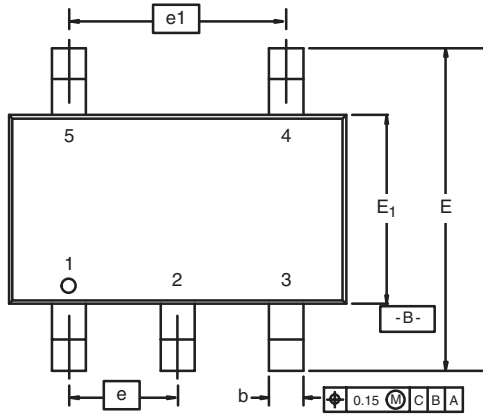


Normalized Thermal Transient Impedance, Junction-to-Foot

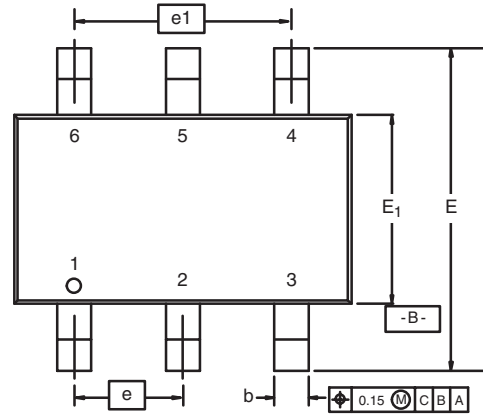
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TSOP: 5/6-LEAD

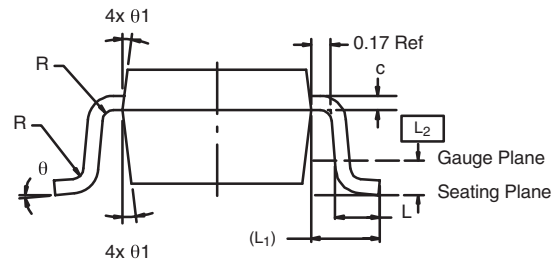
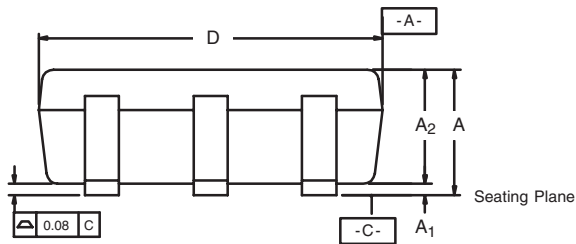
JEDEC Part Number: MO-193C



5-LEAD TSOP

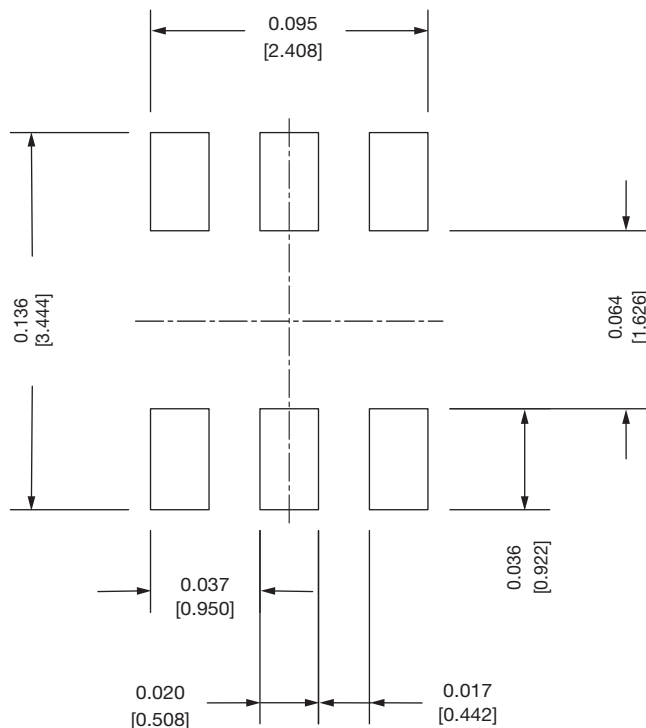
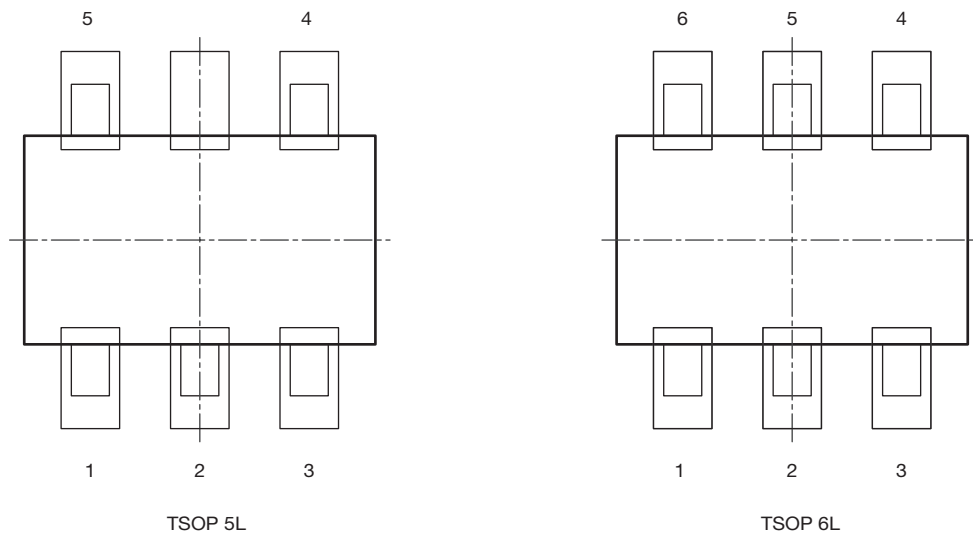


6-LEAD TSOP



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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