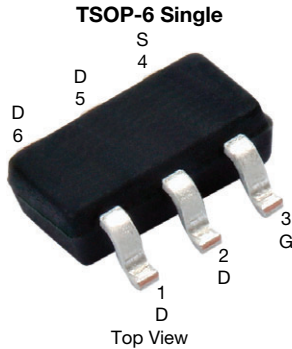


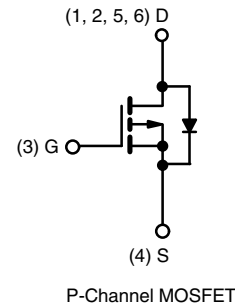
Automotive P-Channel 60 V (D-S) 175 °C MOSFET



FEATURES

- TrenchFET® power MOSFET
- AEC-Q101 qualified °
- 100 % R_g and UIS tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE


PRODUCT SUMMARY	
V _{DS} (V)	-60
R _{DS(on)} (Ω) at V _{GS} = -10 V	0.095
R _{DS(on)} (Ω) at V _{GS} = -4.5 V	0.135
I _D (A)	-5.3
Configuration	Single

Marking Code: 8R

ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free and halogen-free	SQ3427EV (for detailed order number please see www.vishay.com/doc?79771)

ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V _{DS}	-60	V
Gate-Source Voltage		V _{GS}	± 20	
Continuous Drain Current	T _C = 25 °C	I _D	-5.3	A
	T _C = 125 °C		-3	
Continuous Source Current (Diode Conduction)		I _S	-6.3	
Pulsed Drain Current ^a		I _{DM}	-21	
Single Pulse Avalanche Current	L = 0.1 mH	I _{AS}	-21	
Single Pulse Avalanche Energy		E _{AS}	22	
Maximum Power Dissipation ^a	T _C = 25 °C	P _D	5	W
	T _C = 125 °C		1.6	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to +175	°C

THERMAL RESISTANCE RATINGS				
PARAMETER		SYMBOL	LIMIT	UNIT
Junction-to-Ambient	PCB Mount ^b	R _{thJA}	110	°C/W
Junction-to-Foot (Drain)		R _{thJF}	30	

Notes

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
- When mounted on 1" square PCB (FR4 material).
- Parametric verification ongoing.



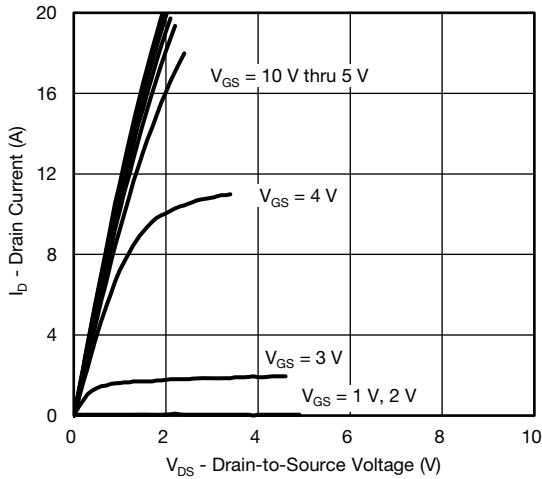
SPECIFICATIONS ($T_C = 25\text{ }^\circ\text{C}$, unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Static							
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$		-60	-	-	V
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$		-1.5	-2	-2.5	
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$		-		± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = -60\text{ V}$	-	-	-1	μA
		$V_{GS} = 0\text{ V}$	$V_{DS} = -60\text{ V}, T_J = 125\text{ }^\circ\text{C}$	-	-	-50	
		$V_{GS} = 0\text{ V}$	$V_{DS} = -60\text{ V}, T_J = 175\text{ }^\circ\text{C}$	-	-	-150	
On-State Drain Current ^a	$I_{D(on)}$	$V_{GS} = -10\text{ V}$	$V_{DS} \leq -5\text{ V}$	-10	-	-	A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -10\text{ V}$	$I_D = -4.5\text{ A}$	-	0.079	0.095	Ω
		$V_{GS} = -10\text{ V}$	$I_D = -4.5\text{ A}, T_J = 125\text{ }^\circ\text{C}$	-	-	0.148	
		$V_{GS} = -10\text{ V}$	$I_D = -4.5\text{ A}, T_J = 175\text{ }^\circ\text{C}$	-	-	0.178	
		$V_{GS} = -4.5\text{ V}$	$I_D = -3.5\text{ A}$	-	0.112	0.135	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -4\text{ A}$		-	9	-	S
Dynamic ^b							
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}$	$V_{DS} = -30\text{ V}, f = 1\text{ MHz}$	-	700	1000	pF
Output Capacitance	C_{oss}			-	90	120	
Reverse Transfer Capacitance	C_{rss}			-	50	80	
Total Gate Charge ^c	Q_g	$V_{GS} = -10\text{ V}$	$V_{DS} = -30\text{ V}, I_D = -5\text{ A}$	-	15.3	22	nC
Gate-Source Charge ^c	Q_{gs}			-	2.5	-	
Gate-Drain Charge ^c	Q_{gd}			-	5.4	-	
Gate Resistance	R_g	$f = 1\text{ MHz}$		2.5	5	7.5	Ω
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = -30\text{ V}, R_L = 6\text{ }\Omega$ $I_D \cong -5\text{ A}, V_{GEN} = -10\text{ V}, R_g = 1\text{ }\Omega$		-	8	12	ns
Rise Time ^c	t_r			-	24	35	
Turn-Off Delay Time ^c	$t_{d(off)}$			-	25	38	
Fall Time ^c	t_f			-	33	50	
Source-Drain Diode Ratings and Characteristics ^b							
Pulsed Current ^a	I_{SM}			-	-	-21	A
Forward Voltage	V_{SD}	$I_F = -1.6\text{ A}, V_{GS} = 0\text{ V}$		-	-0.8	-1.2	V

Notes

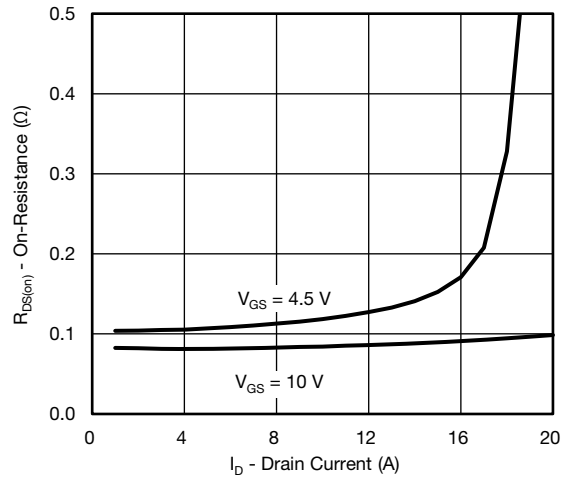
- d. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
e. Guaranteed by design, not subject to production testing.
f. Independent of operating temperature.

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.

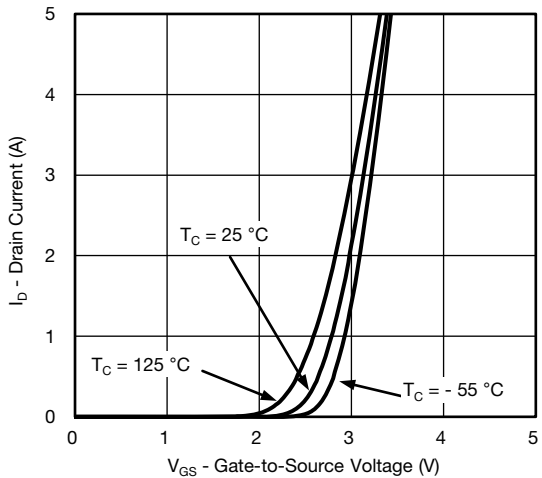
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



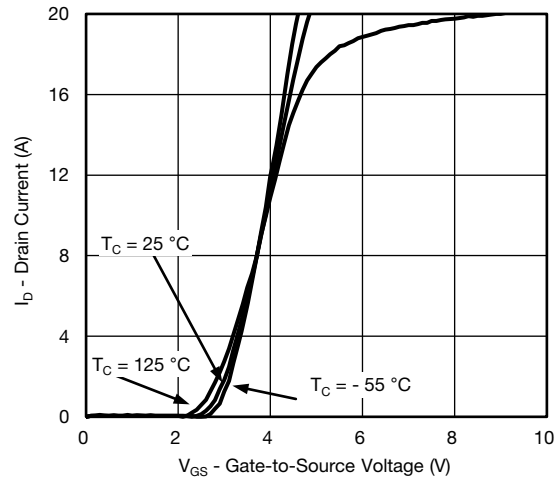
Output Characteristics



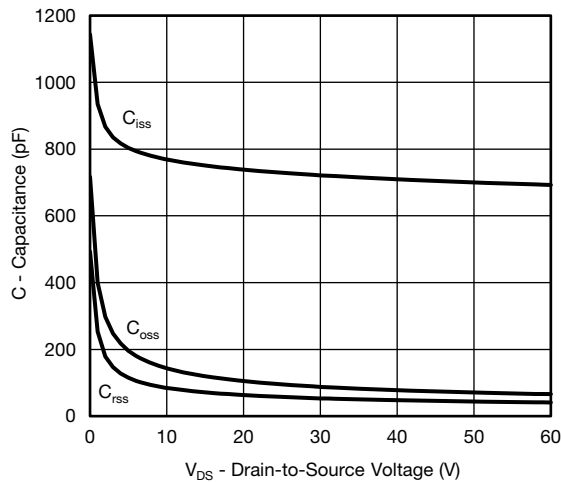
On-Resistance vs. Drain Current and Gate Voltage



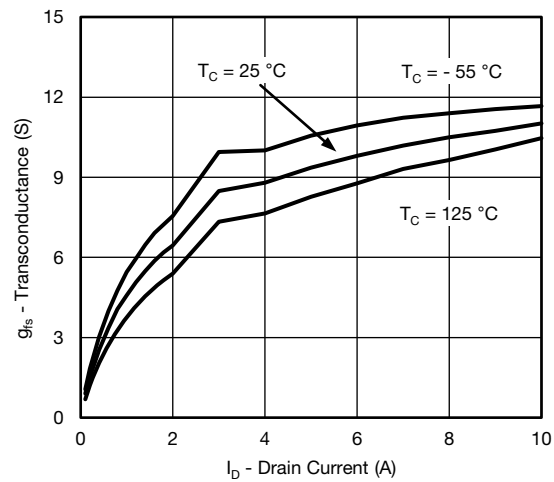
Transfer Characteristics



Transfer Characteristics

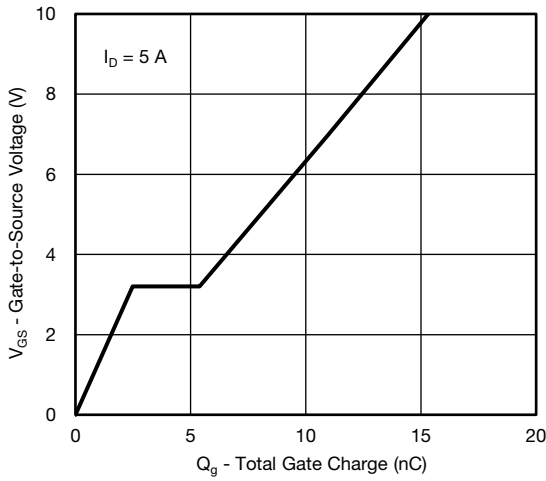


Capacitance

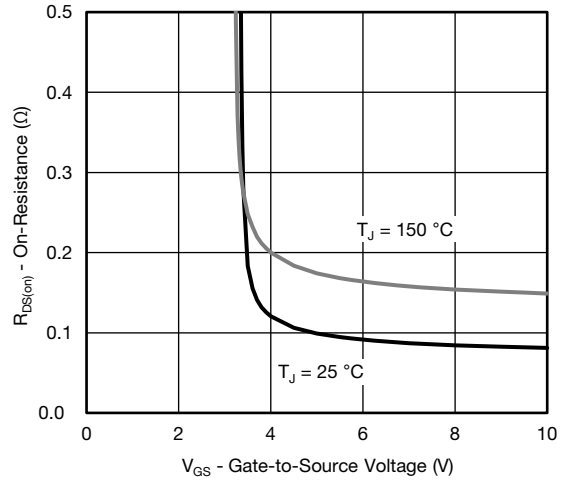


Transconductance

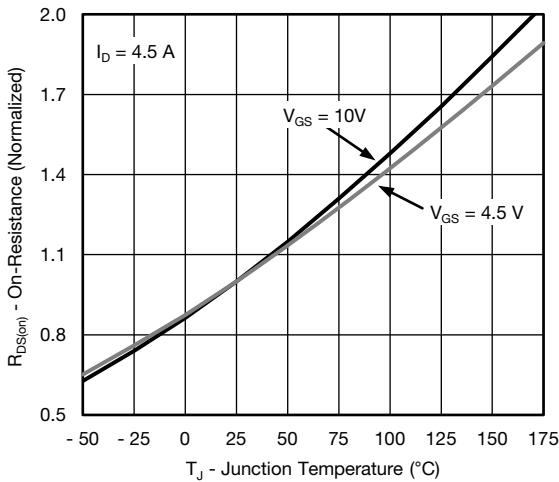
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



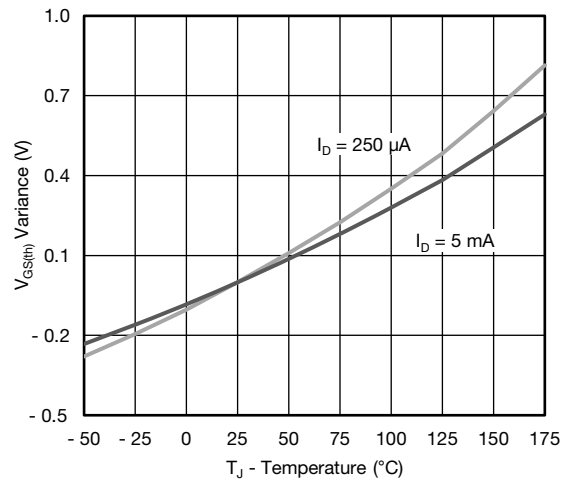
Gate Charge



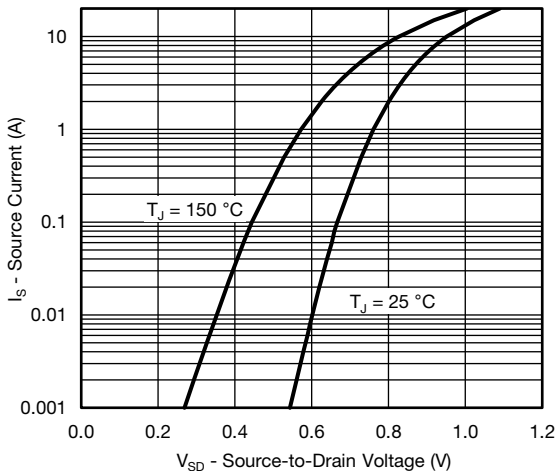
On-Resistance vs. Gate-to-Source Voltage



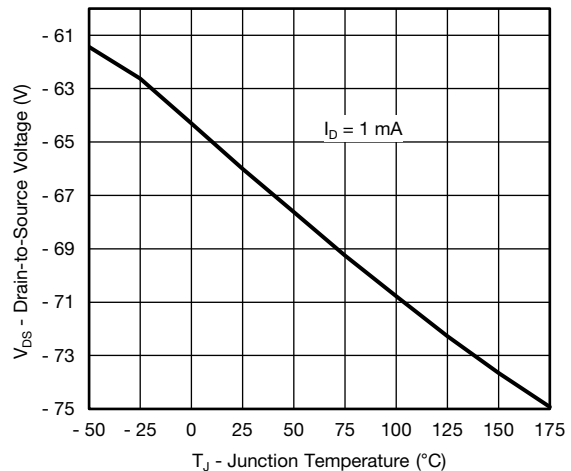
On-Resistance vs. Junction Temperature



Threshold Voltage



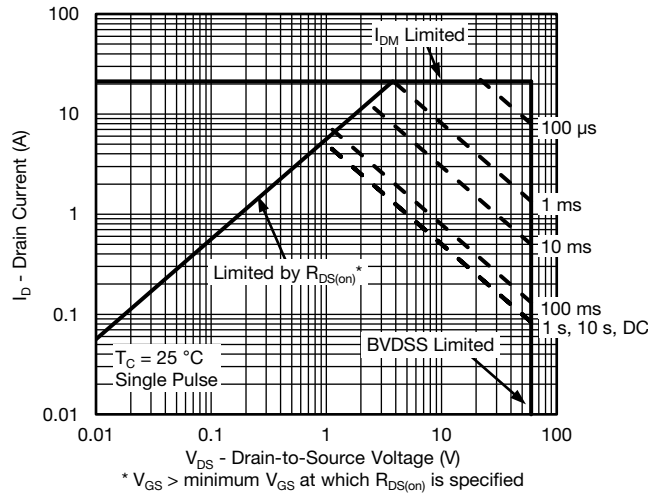
Source-Drain Diode Forward Voltage



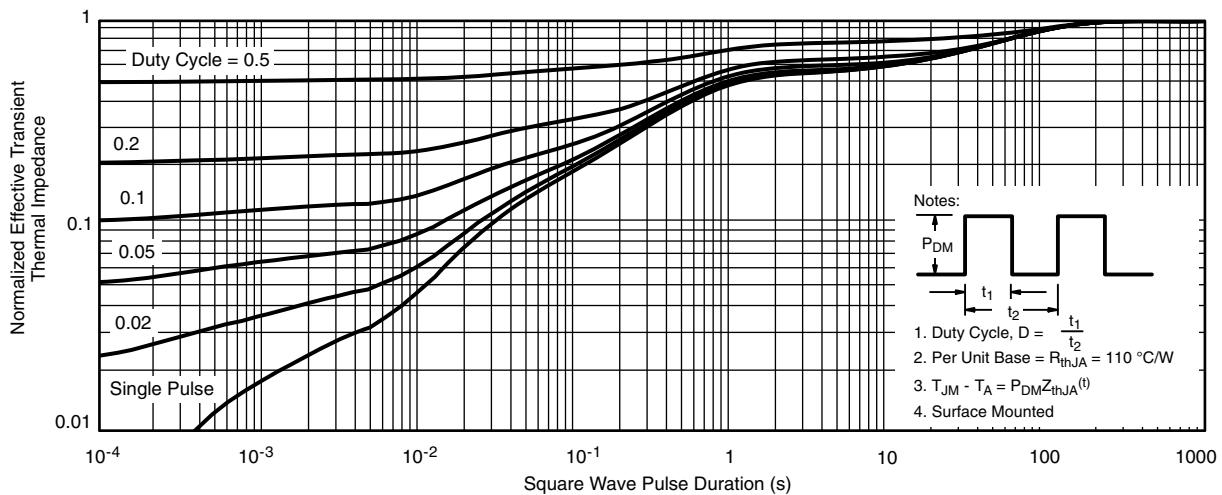
Drain-to-Source Voltage vs. Junction Temperature



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



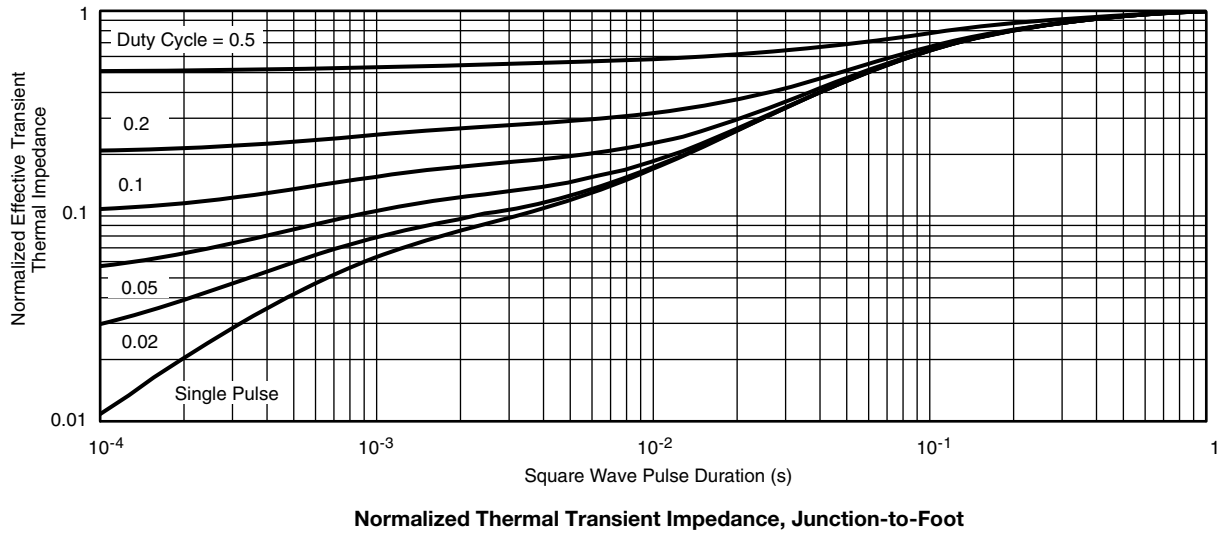
Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?67987.

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
A₁	0.01	-	0.10	0.0004	-	0.004
A₂	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
E₁	1.55	1.65	1.70	0.061	0.065	0.067
e	0.95 BSC			0.0374 BSC		
e₁	1.80	1.90	2.00	0.071	0.075	0.079
L	0.32	-	0.50	0.012	-	0.020
L₁	0.60 Ref			0.024 Ref		
L₂	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						



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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