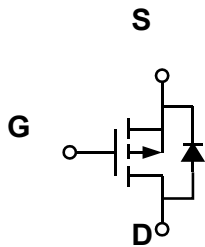
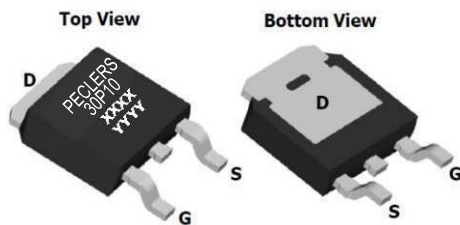


100V P-Channel Enhancement Mode MOSFET

Schematic diagram



Marking and pin assignment



30P10—PECN30P10

XXXX—Wafer Lot No.

YYYY—Quality Code



Description

The PECN30P10G uses advanced trench technology and design to provide excellent $R_{D(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

- ◆ $V_{DS} = -100V$ $I_D = -30A$
- $R_{D(ON)}(Typ.) = 36m\Omega$ @ $V_{GS} = -10V$
- $R_{D(ON)}(Typ.) = 40m\Omega$ @ $V_{GS} = -4.5V$
- High power and current handling capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

Application

- ◆ Load switch

Package

- ◆ TO-252-2L

100% UIS TESTED!

100% ΔV_{ds} TESTED!

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN30P10G	-55°C to +150°C	TO-252-2L	2500

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	-100	V
Gate-source voltage		V_{GS}	±20	V
Continuous Drain Current ($T_J = 150^\circ C$) ^b	$T_C = 25^\circ C$	I_D	-36	A
	$T_C = 70^\circ C$		-29	
	$T_A = 25^\circ C$		-9 ^{b,c}	
	$T_A = 70^\circ C$		-7.2 ^{b,c}	
Pulsed Drain Current		I_{DM}	-40	
Continuous Source Current (Diode Conduction)	$T_C = 25^\circ C$	I_S	-50 ^a	
	$T_A = 25^\circ C$		-5.75 ^{b,c}	
Avalanche Current		I_{AS}	-35	
Single Pulse Avalanche Energy		E_{AS}	61	mJ

Maximum power dissipation	$T_C=25^{\circ}\text{C}$	P_D	113	W
	$T_C=70^{\circ}\text{C}$		72	
	$T_A=25^{\circ}\text{C}$		6.9 ^{b,c}	
	$T_A=70^{\circ}\text{C}$		4.4 ^{b,c}	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55—150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Typical	Maximum	Unit
Thermal Resistance-Junction to Case	$R_{\theta JC}$	0.85	1.1	$^{\circ}\text{C/W}$
Thermal Resistance junction-to ambient ^a	$t \leq 10\text{s}$	15	18	
	Steady State	40	50	

Notes:

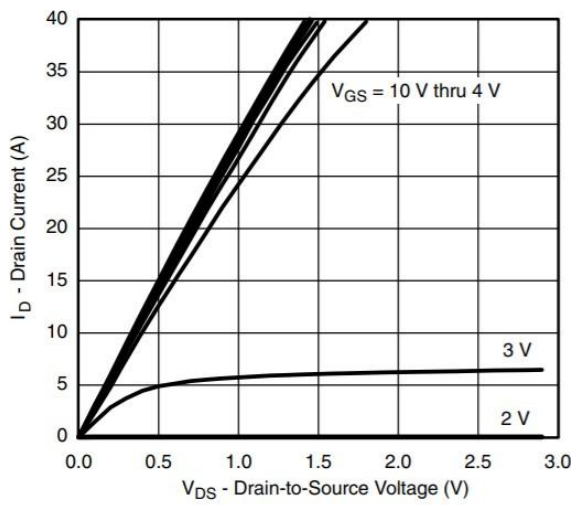
- a. Package limited.
- b. Surface mounted on 1" x 1" FR4 board.
- c. $t = 10\text{ s}$.
- d. Maximum under steady state conditions is $50\text{ }^{\circ}\text{C/W}$.

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

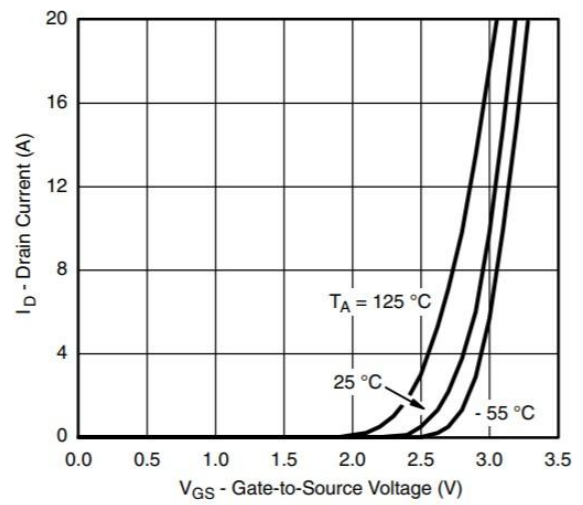
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-100	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-100\text{V}, V_{GS}=0\text{V}$	-	-	-25	μA
		$V_{DS}=-80\text{V}, V_{GS}=0\text{V}, T_J=150^{\circ}\text{C}$	-	-	-100	
Gate Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1.0	-1.9	-3.0	V
Drain-source on-state resistance ¹	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-30\text{A}$	-	36	43	m Ω
		$V_{GS}=-4.5\text{V}, I_D=-10\text{A}$	-	40	48	
Forward Transconductance	G_{FS}	$V_{DS}=-15\text{V}, I_D=-10\text{A}$	-	38	-	S
Diode Characteristics						
Diode Forward Voltage ¹	V_{SD}	$I_{SD}=-7.7\text{A}, V_{GS}=0\text{V}$	-	-0.8	-1.2	V
Diode Continuous Forward Current	I_S	$T_C = 25\text{ }^{\circ}\text{C}$	-	-	-50	A
Reverse Recovery Time	t_{rr}	$I_F=-7\text{A},$	-	60	-	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=-100\text{A/us}$	-	150	-	nC
Dynamic Characteristics²						
Gate Resistance	R_G	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1\text{MHz}$	-	4	-	Ω
Input capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=-50\text{V}$ $f=1.0\text{MHz}$	-	4600	-	pF
Output capacitance	C_{OSS}		-	230	-	
Reverse transfer capacitance	C_{RSS}		-	175	-	
Turn-on delay time	$t_{D(ON)}$	$V_{GS}=-10\text{V}, V_{DD}=-50\text{V},$	-	15	-	ns

Turn-on Rise time	t_r	$R_D=2.4\Omega, I_D=-7.7A, R_G=1\Omega$	-	20	-	
Turn-off delay time	$t_{D(OFF)}$		-	110	-	
Turn-off Fall time	t_f		-	100	-	
Total gate charge	Q_g	$V_{GS}=-4.5V, I_D=-9A$ $V_{DS}=-50V$	-	54		nC
Gate-source charge	Q_{gs}			14		
Gate-drain charge	Q_{gd}		-	26	-	

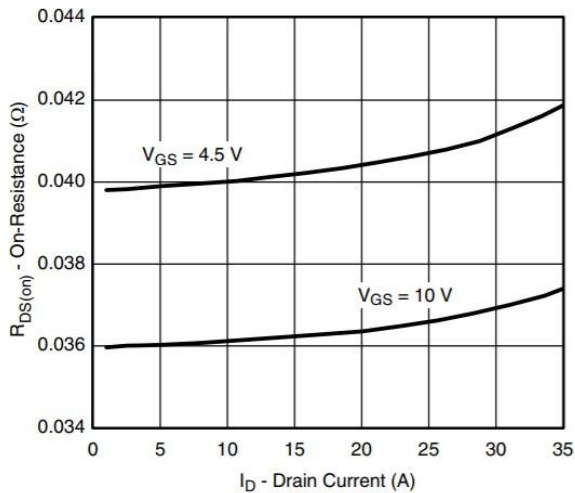
Typical Performance Characteristics



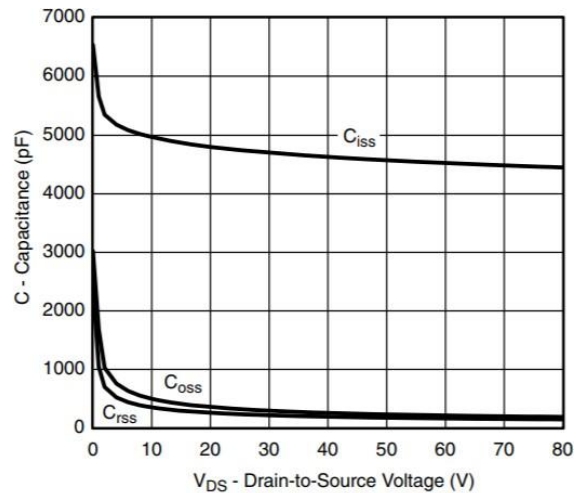
Output Characteristics



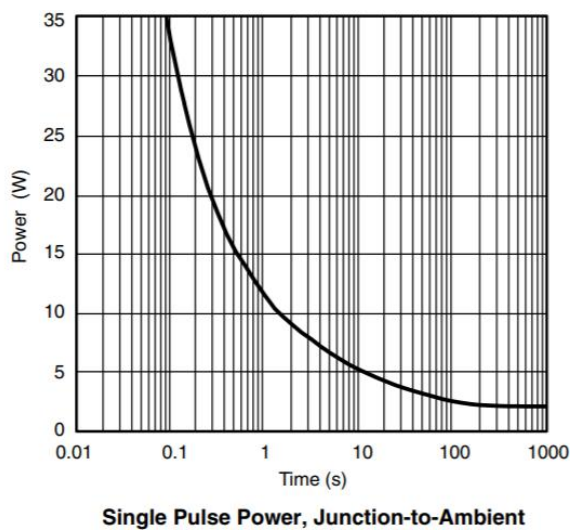
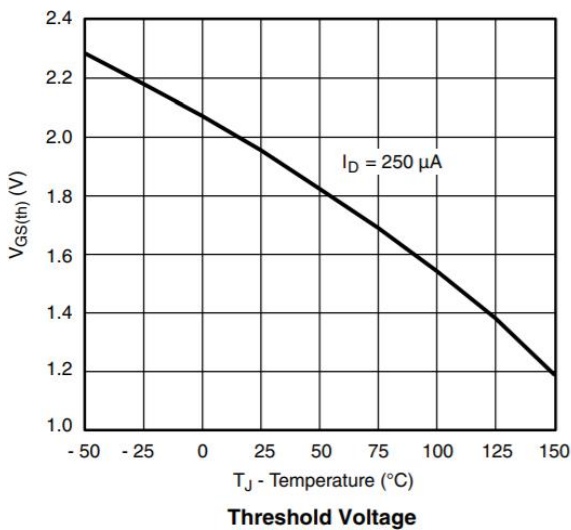
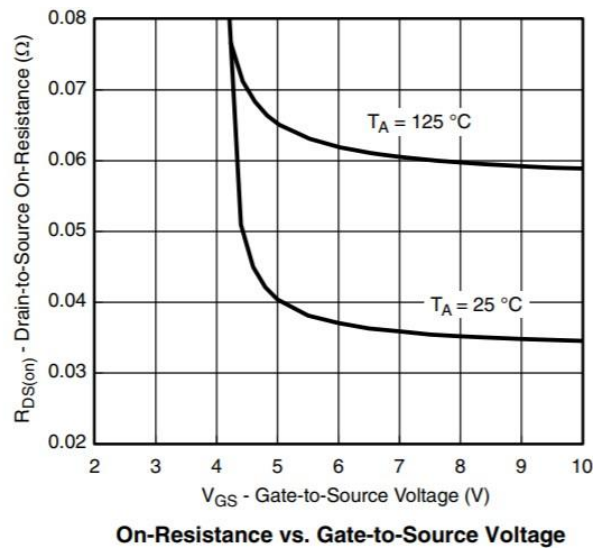
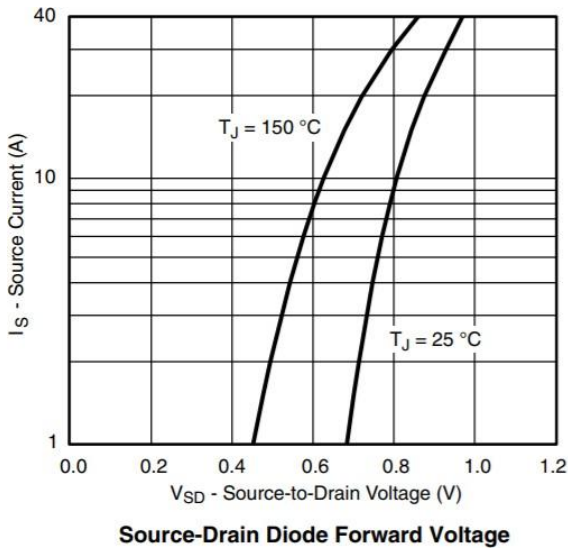
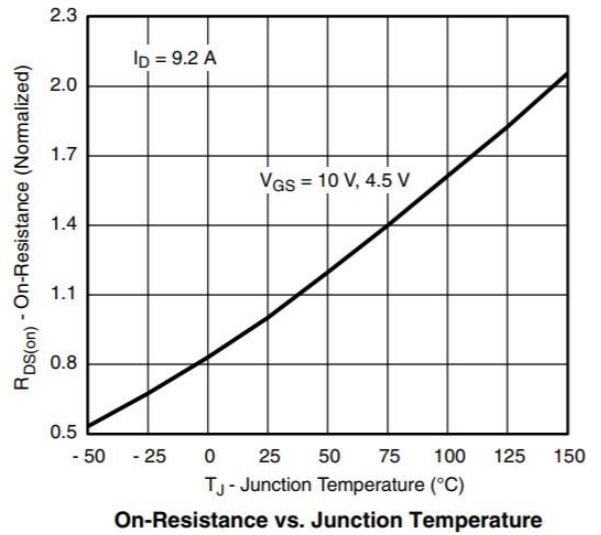
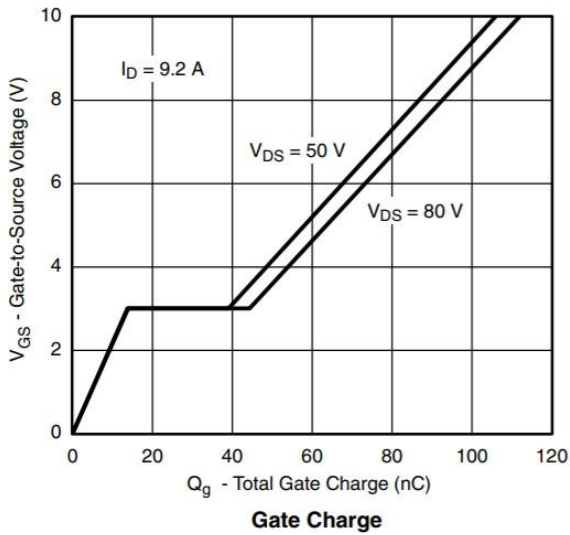
Transfer Characteristics

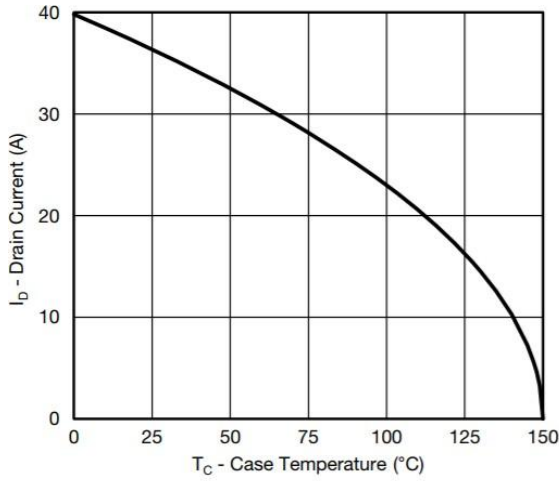


On-Resistance vs. Drain Current and Gate Voltage

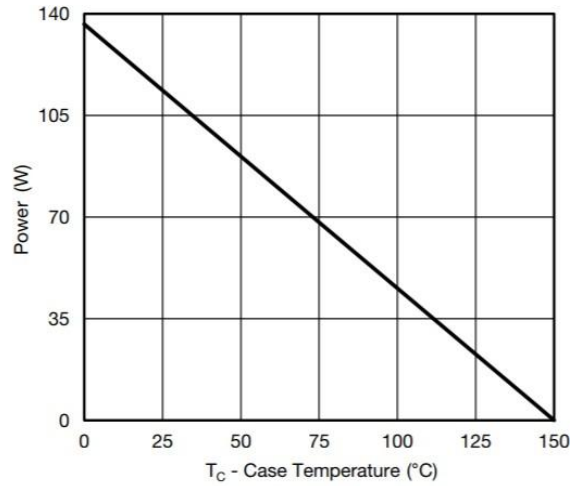


Capacitance

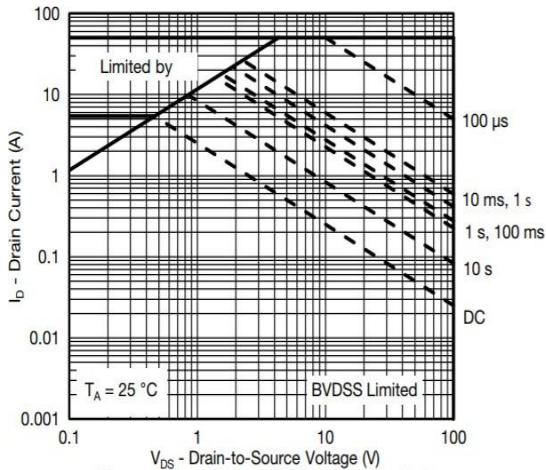




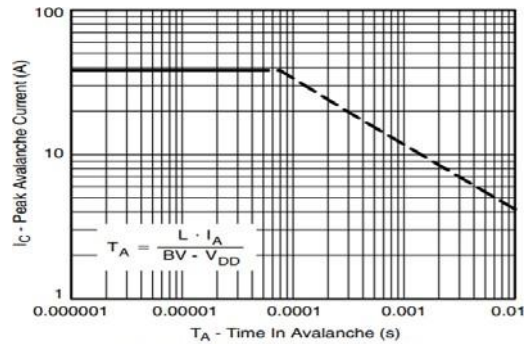
Current Derating*



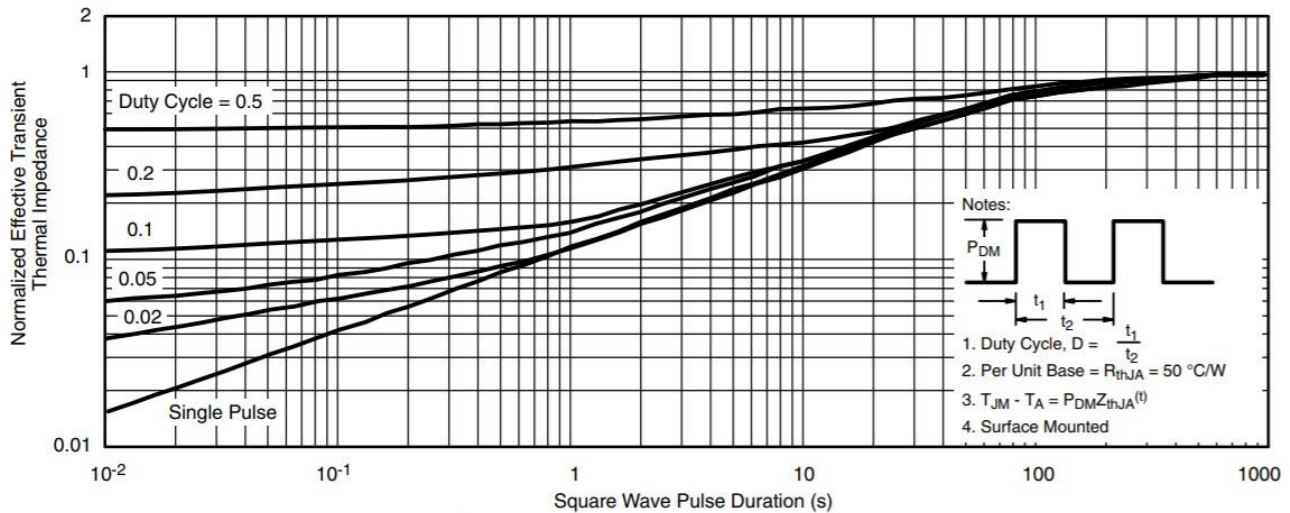
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient



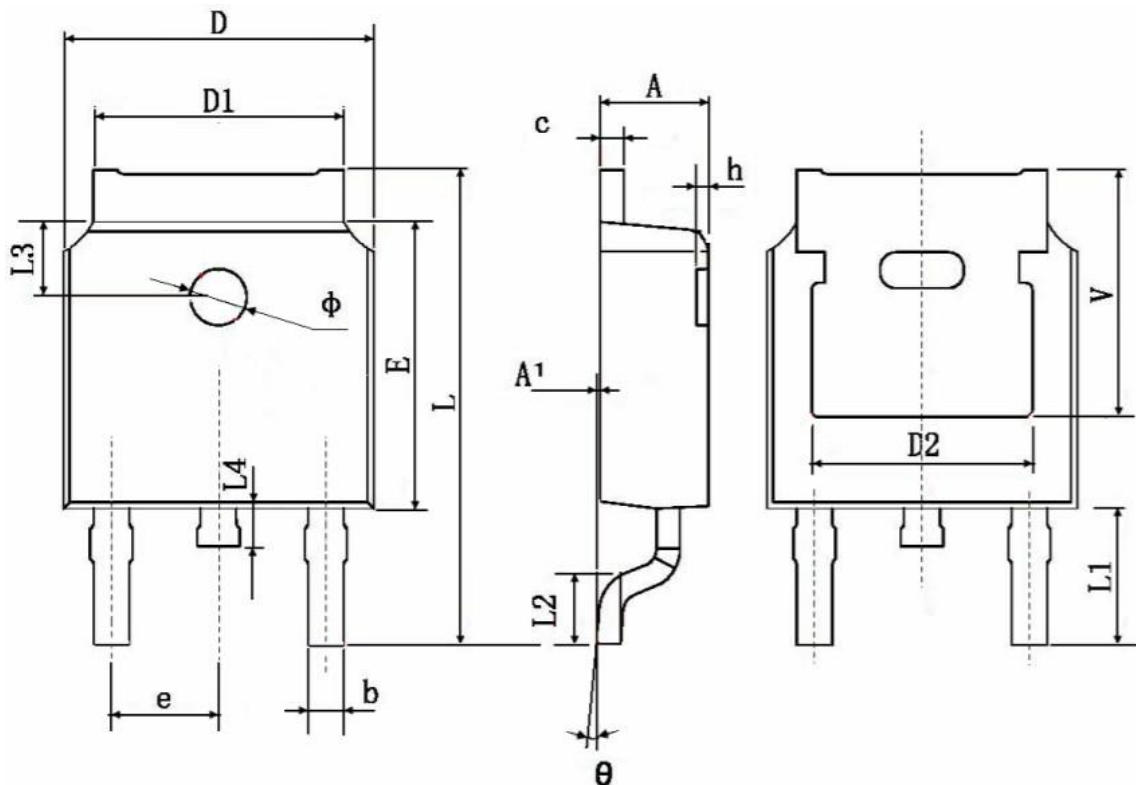
Single Pulse Avalanche Capability



Normalized Thermal Transient Impedance, Junction-to-Ambient

Package Information

- TO-252-2L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	