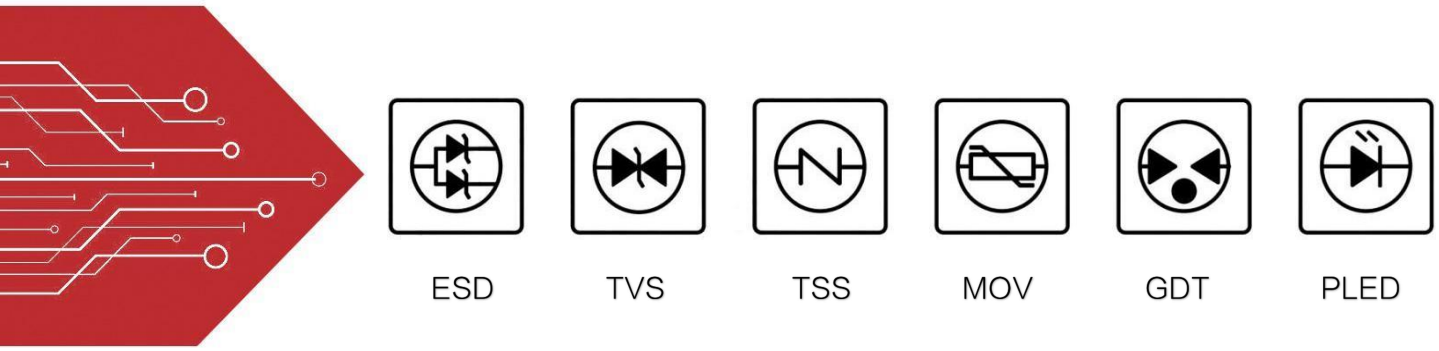
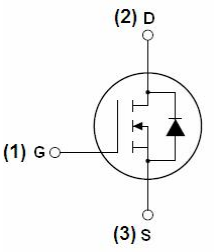
MSKSEMI
SEMICONDUCTOR

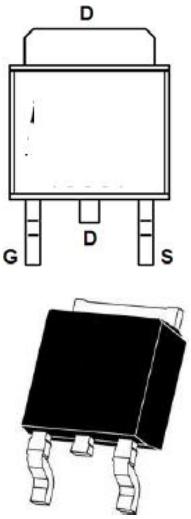


Product data sheet

www.msksemi.com

Schematic diagram





TO-252

FEATURE

- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

APPLICATION

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	50	A
Pulsed Drain Current	I_{DM}	220	
Single Pulsed Avalanche Energy*	E_{AS}	115	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{stg}	-50 ~+150	

*E_{AS} condition: T_j=25℃,V_{DD}=50V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

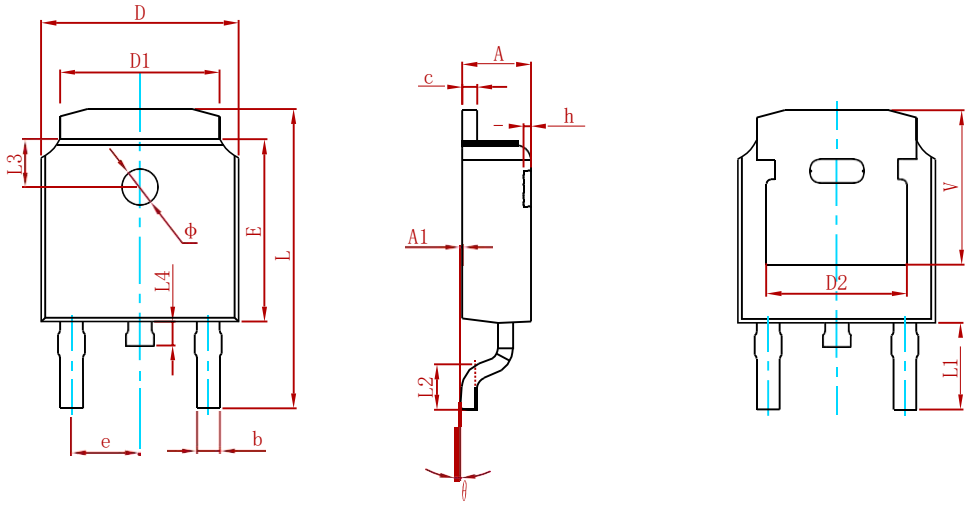
Electrical characteristics (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.5		2.5	V
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		11.5	15	mΩ
Forward transconductance	g_{FS}	V_{DS} =25V, I_D =20A	24			S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V, f =1MHz		900		pF
Output capacitance	C_{oss}			104		
Reverse transfer capacitance	C_{rss}			33		
Switching characteristics (note 2)						
Total gate charge	Q_g	V_{DS}=30V, V_{GS}=10V, I_D=50A		30		nC
Gate-source charge	Q_{gs}			10		
Gate-drain charge	Q_{gd}			5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,I_D=2A, V_{GS}=10V,R_G=2.5Ω, R_L=15Ω		25		ns
Turn-on rise time	t_r			5		
Turn-off delay time	$t_{d(off)}$			50		
Turn-off fall time	t_f			6		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD}	V_{GS} =0V, I_S=40A			1.2	V
Continuous drain-source diode forward current	I_S				50	A
Pulsed drain-source diode forward current	I_{SM}				220	A

Notes:

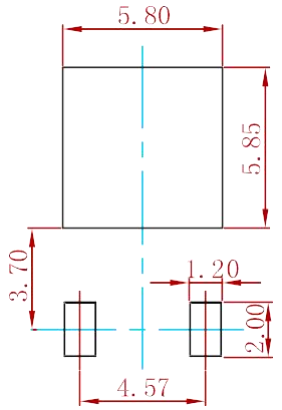
1. Pulse Test : Pulse Width≤300μs, duty cycle≤2%.
2. Guaranteed by design, not subject to production.

PACKAGE MECHANICAL DATA



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	0.635	0.770	0.025	0.030
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 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
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	5.250 REF.		0.207 REF.	

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
MS50N06	TO-252	2500

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