

SE10015

N-Channel MOSFET

Revision: A

General Description

Advanced trench technology to provide excellent RDS(ON), low gate charge and low operation voltage. This device is suitable for using as a load switch or in PWM applications.

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

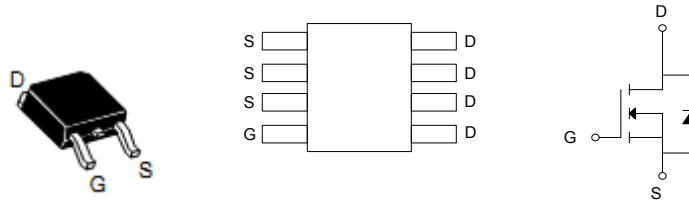
Features

For a single MOSFET

- $V_{DS} = 100V$
- $R_{DS(ON)} = 67m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	15	A
	Pulsed		60	
Total Power Dissipation	@TA=25°C	P_D	50	W
Operating Junction Temperature Range		T_J	-55 to 150	°C

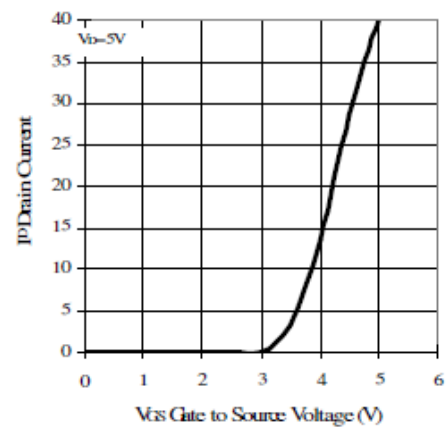
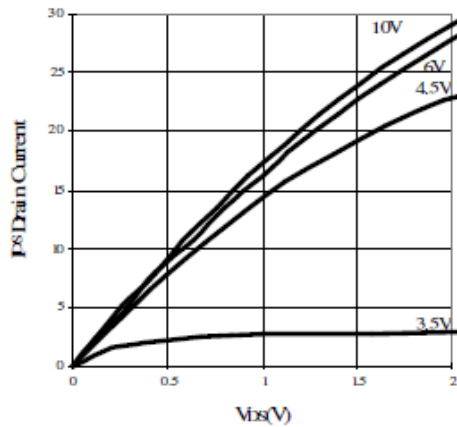
Thermal Resistance

Symbol	Parameter	Min	Typ	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case		25	°C/W

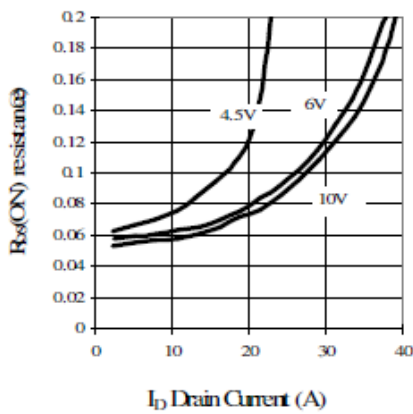
SE10015

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0 V	100			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 100V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =20V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1			V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =15A		67	80	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =15A		10		S
V _{SD}	Diode Forward Voltage	I _S =15A, V _{GS} =0V			1.2	V
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =50V, I _D =10A		22.3		nC
Q _{gs}	Gate Source Charge			2.87		nC
Q _{gd}	Gate Drain Charge			6.14		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =50V, R _L =6.4Ω		15		ns
t _{d(off)}	Turn-Off Delay Time			25		ns
t _{d(r)}	Turn-On Rise Time			5		ns
t _{d(f)}	Turn-Off Fall Time			7		ns

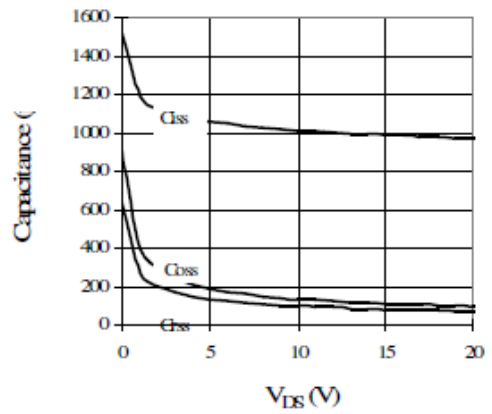
Typical Characteristics



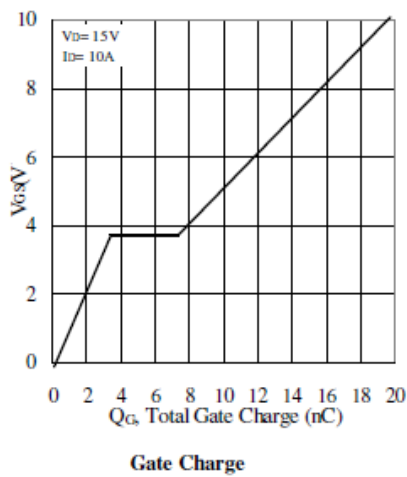
Output Characteristics



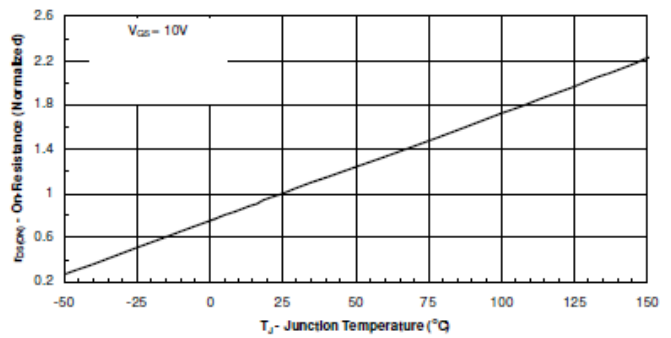
Transfer Characteristics



On-Resistance vs. Drain Current

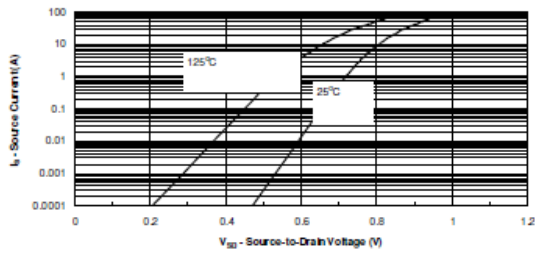


Capacitance

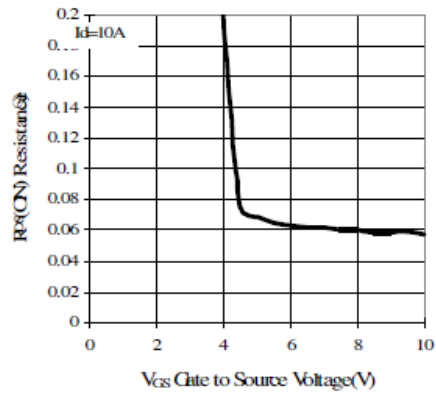


On-Resistance vs. Junction Temperature

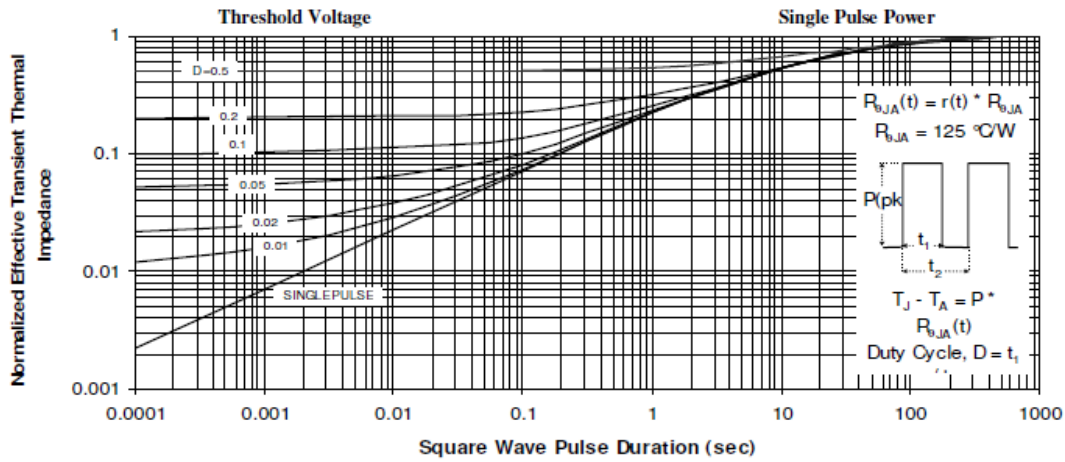
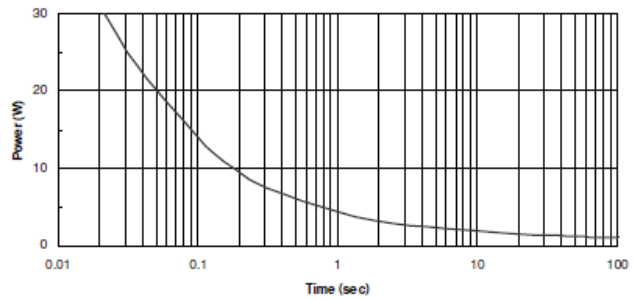
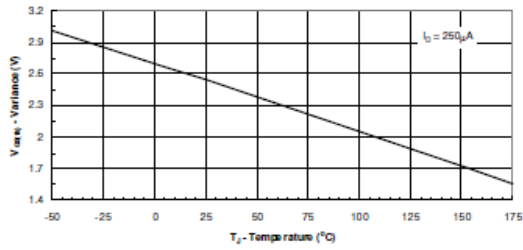
Typical Characteristics



Source-Drain Diode Forward Voltage



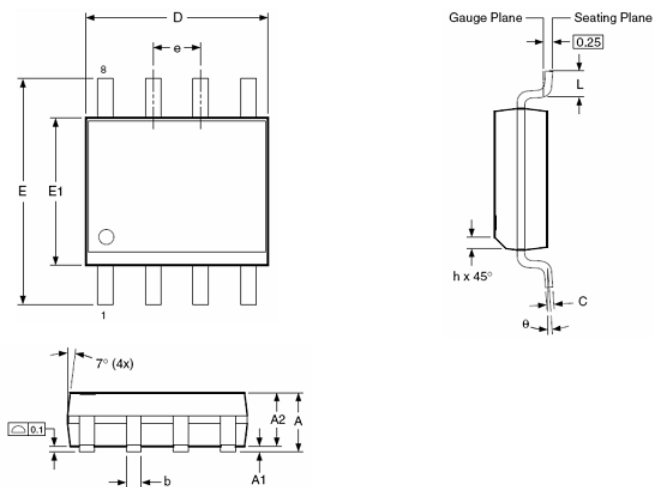
On-Resistance vs. Gate-to Source Voltage



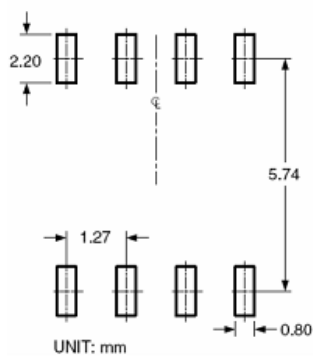
Normalized Thermal Transient Impedance, Junction-to-Ambient

Package Outline Dimension

SOP-8



RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	1.35	1.65	1.75
A1	0.10	—	0.25
A2	1.25	1.50	1.65
b	0.31	—	0.51
c	0.17	—	0.25
D	4.80	4.90	5.00
E1	3.80	3.90	4.00
e	1.27 BSC		
E	5.80	6.00	6.20
h	0.25	—	0.50
L	0.40	—	1.27
θ	0°	—	8°

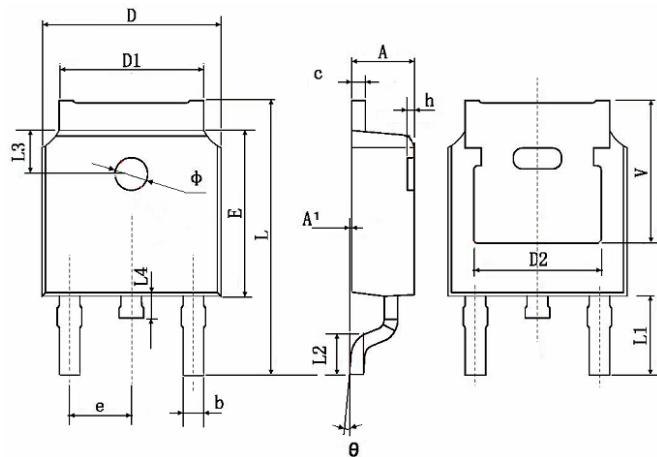
Dimensions in inches

Symbols	Min.	Nom.	Max.
A	0.053	0.065	0.069
A1	0.004	—	0.010
A2	0.049	0.059	0.065
b	0.012	—	0.020
c	0.007	—	0.010
D	0.189	0.193	0.197
E1	0.150	0.154	0.157
e	0.050 BSC		
E	0.228	0.236	0.244
h	0.010	—	0.020
L	0.016	—	0.050
θ	0°	—	8°

NOTES:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

TO-252



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	0.483 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
phi	1.100	1.300	0.043	0.051
theta	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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