

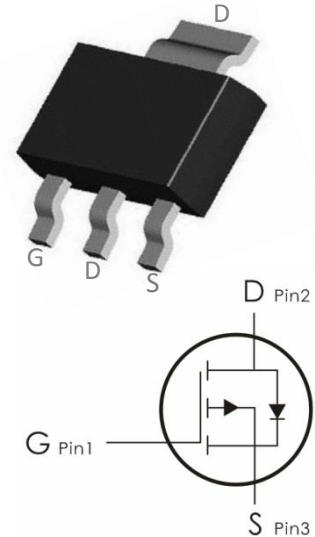
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=60V, I_D=4.5A, R_{DS(on)} < 60m\Omega @ V_{GS}=10V$ (Typ: $50m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.
- 6) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
TE060NDG	E060ND	SOT-223	4000 pcs/Reel

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹	4.5	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$ ¹	3.1	
I_{DM}	Pulsed Drain Current ²	18	
P_D	Power Dissipation	8.9	W
E_{AS}	Single pulse avalanche energy ³	50	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	14	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =60V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	Gate-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.3	2	V
R _{DS(on)}	Drain-Source On Resistance ⁴	V _{GS} =10V, I _D =8A	---	50	60	m Ω
		V _{GS} =4.5V, I _D =8A	---	60	78	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	430	---	pF
C _{oss}	Output Capacitance		---	38	--	
C _{rss}	Reverse Transfer Capacitance		---	34	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =30V, I _D =3A, R _{ENG} =3 Ω ,V _{GS} =10V	---	6	---	ns
t _r	Rise Time		---	11	---	ns
t _{d(off)}	Turn-Off Delay Time		---	13	---	ns
t _f	Fall Time		---	8	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =3A	---	9.5	---	nC
Q _{gs}	Gate-Source Charge		---	3	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	2.5	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =2A	---	---	1.2	V
I _S	Continuous Drain Current	V _D =V _G =0V	---	---	3.7	A
I _{SM}	Pulsed Drain Current		---	---	15	A

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : $T_J=25^{\circ}C, V_{DD}=50V, V_G=10V, L=0.5mH$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Test Circuit

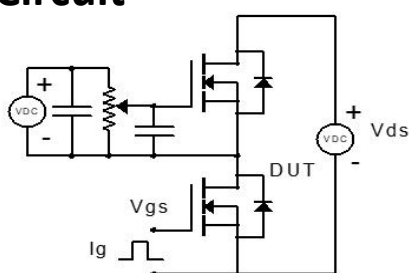


Figure 1: Gate Charge Test Circuit & Waveform

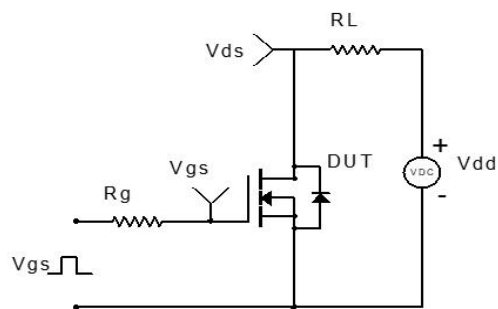
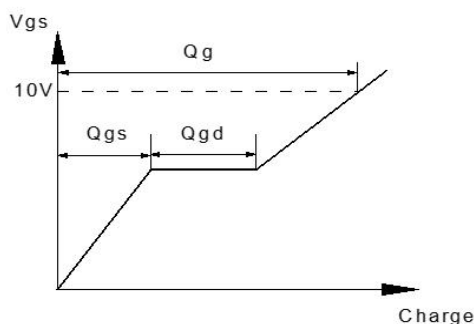


Figure 2: Resistive Switching Test Circuit & Waveform

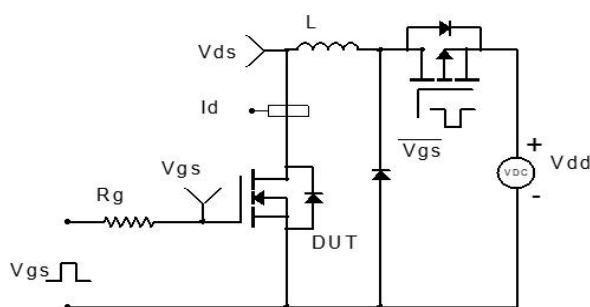
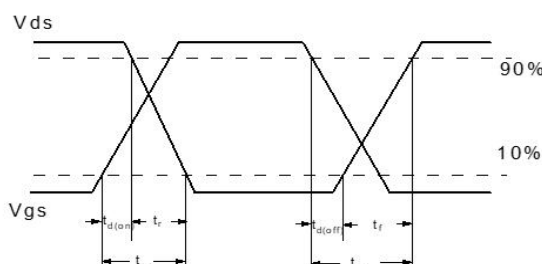


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

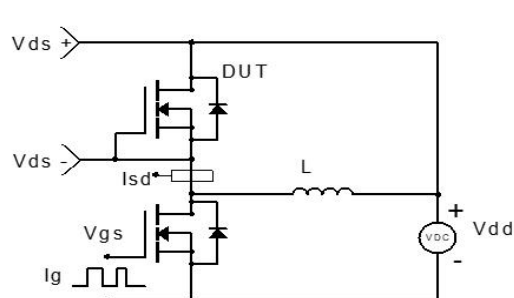
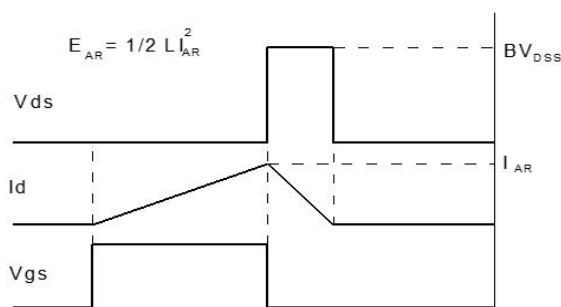
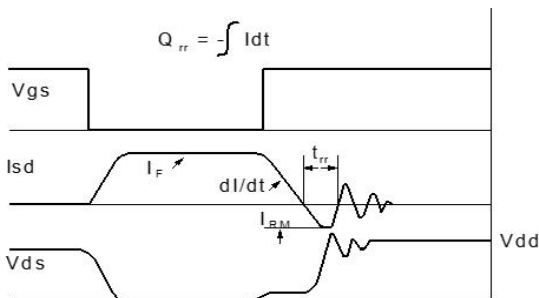
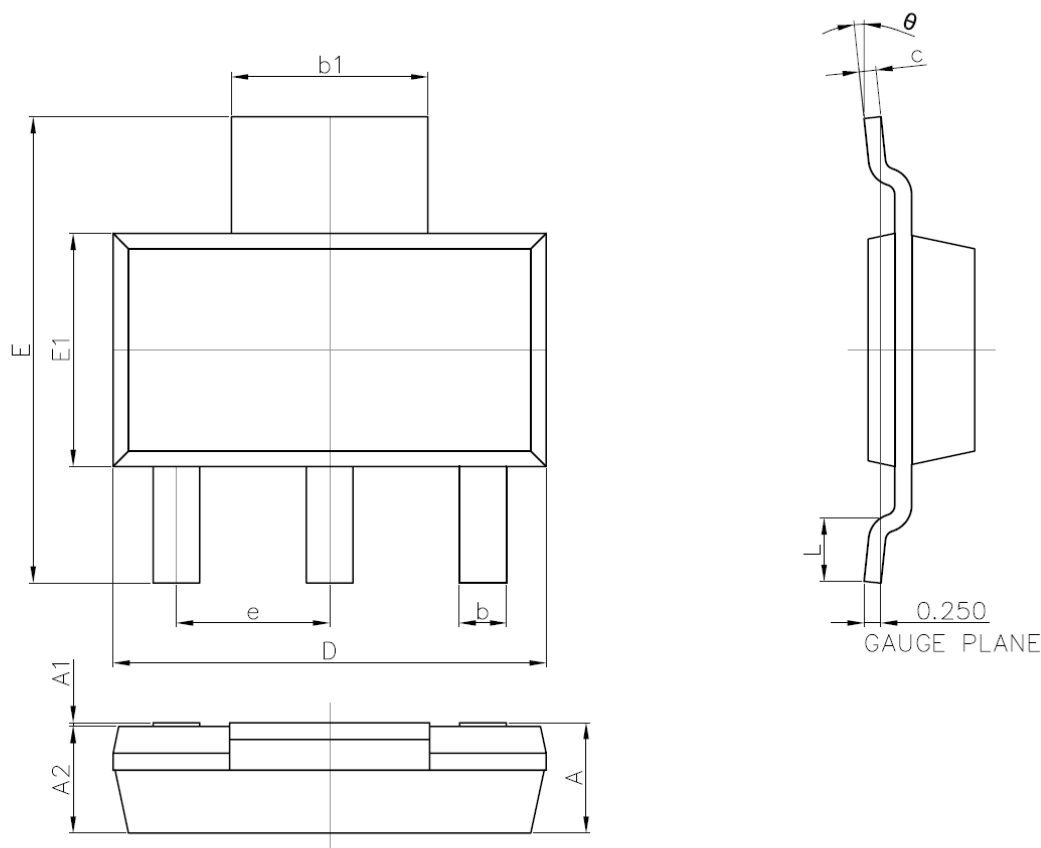


Figure 4: Diode Recovery Test Circuit & Waveform



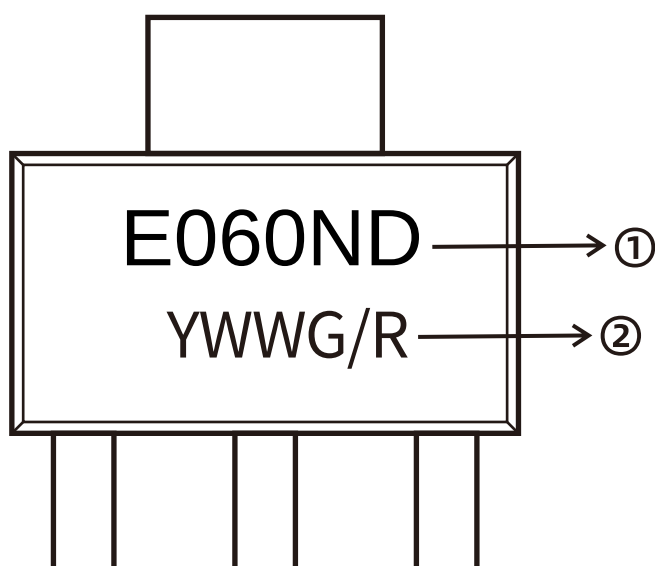
SOT-223 Package Information:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

Marking Information:

- ①: Part NO.
 ②: Date Code (YWWG / R)
 Y: Year Code , last digit of the year
 WW : Week Code (01-53)
 G/R: G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2026-01-19	Release of final version

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