

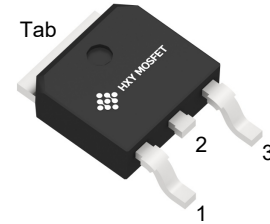


Features

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Avalanche Ruggednes

Applications

- Solar Inverters
- Switch Mode Power Supplies
- UPS
- Battery Chargers

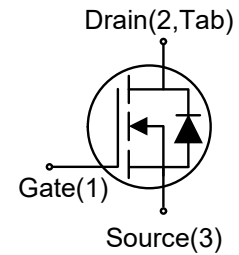


TO-252-2L



Package Marking and Ordering Information

Ordering Part Number	Package	Brand
TK560P65Y,RQ	TO-252-2L	HXY MOSFET



Absolute Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions
V_{DSmax}	Drain - Source Voltage	650	V	
V_{GSmax}	Gate - Source Voltage (Absolute maximum values)	-8/+22	V	
V_{GS}	Gate - Source Voltage	-4/+18	V	
I_D	Continuous Drain Current	6.8 4.8	A	$T_C = 25^{\circ}C$ $T_C = 100^{\circ}C$
$I_{D(pulse)}$	Pulsed Drain Current	29	A	Pulse width t_p limited by T_{jmax}
P_{TOT}	Power Dissipation	41	W	$T_C = 25^{\circ}C$
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^{\circ}C$	

•Example of acceptable V_{GS} waveform





Electrical Characteristics ($T_C = 25^\circ\text{C}$ unless other wise specified)

Symbol	Parameter	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristics						
V_{DSS}	Drain-source breakdown voltage	750	-	-	V	$V_{GS}=0V, I_D=100\mu A$
$V_{GS(th)}$	Gate threshold voltage	2	2.8	4	V	$V_{DS}=V_{GS}, I_D=0.43mA$
I_{DSS}	Zero gate voltage drain current	-	1	10	μA	$V_{DS}=650V, V_{GS}=0V$ $T_C=25^\circ\text{C}$
		-	5	-		$T_C=175^\circ\text{C}$
I_{GSS}	Gate-source leakage current	-		100	nA	$V_{GS}=18V, V_{DS}=0V$
$R_{DS(on)}$	Drain-source on-state resistance	-	460	610	m Ω	$V_{GS}=18V, I_D=2A,$ $T_J=25^\circ\text{C}$
			540			$T_J=175^\circ\text{C}$
$R_{DS(on)}$	Drain-source on-state resistance	-	580	-	m Ω	$V_{GS}=15V, I_D=2A, T_J=25^\circ\text{C}$
g_{fs}	Transconductance	-	1.3	-	S	$V_{DS}=20V, I_D=2A$
Dynamic Characteristics						
C_{iss}	Input Capacitance	-	176	-	pF	$V_{DS} = 400V$ $V_{GS} = 0V$ $T_J = 25^\circ\text{C}$ $V_{AC} = 25mV$ $f = 1MHz$
C						



Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Test Conditions
R_{thJC}	Thermal Resistance from Junction to Case	3.7	$^{\circ}\text{C/W}$	
R_{thJA}	Thermal Resistance From Junction to Ambient	40		

Typical Performance

Fig 1. Output Characteristics ($T_J = -55^{\circ}\text{C}$)

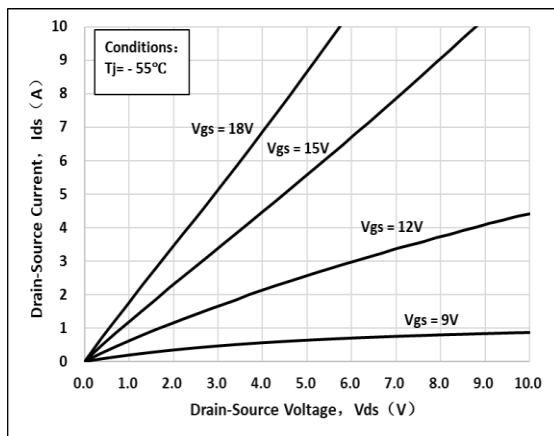


Fig 2. Output Characteristics ($T_J = 25^{\circ}\text{C}$)

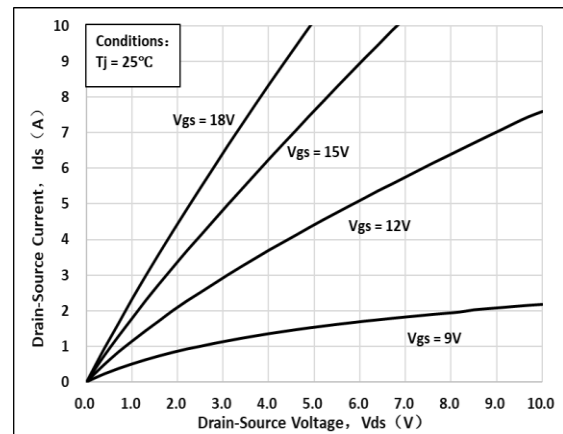


Fig 3. Output Characteristics ($T_J = 175^{\circ}\text{C}$)

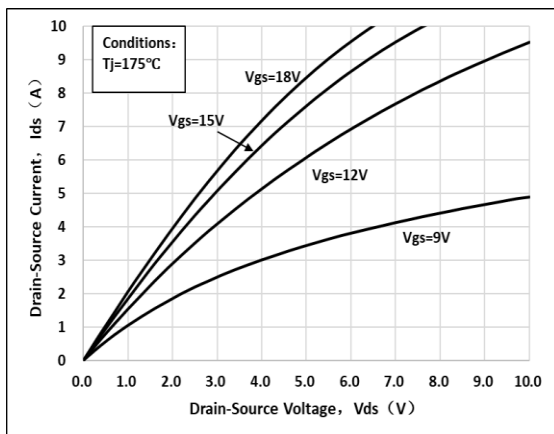


Fig 4: $R_{ds(on)}$ Vs I_{ds} Characteristics

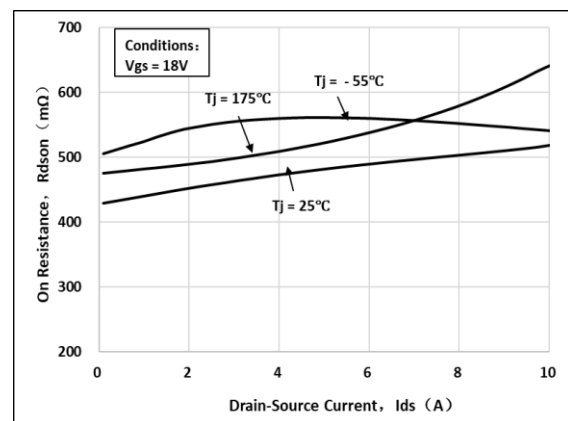




Fig 5: Rds(on) vs. Temperature

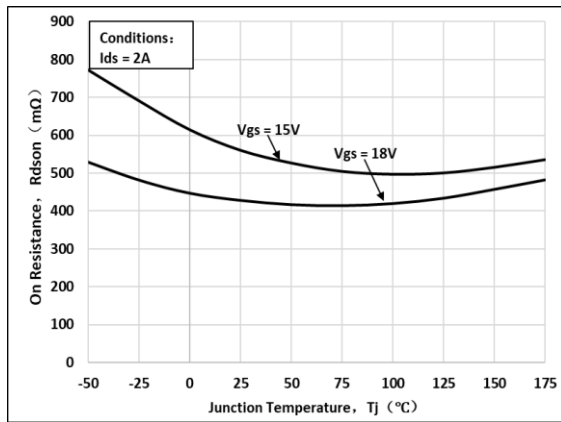


Fig 5: Transfer Characteristics

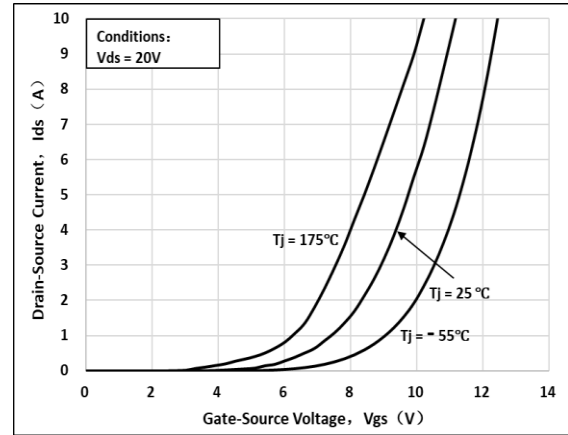


Fig 7: Body-diode Characteristics ($T_J = -55^{\circ}C$)

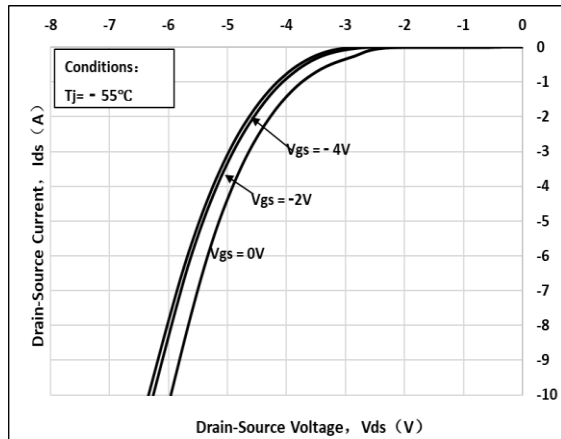


Fig 8: Body-diode Characteristics ($T_J = 25^{\circ}C$)

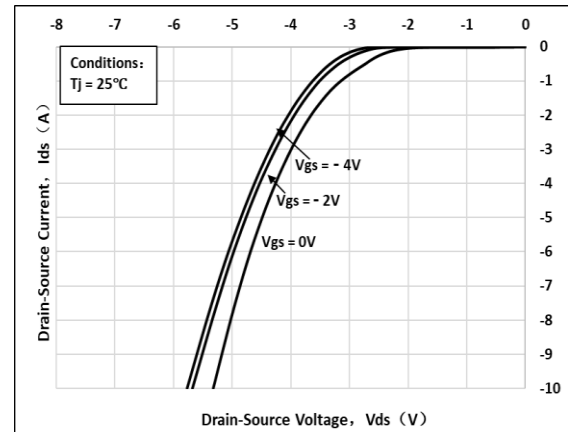


Fig 9: Body-diode Characteristics ($T_J = 175^{\circ}C$)

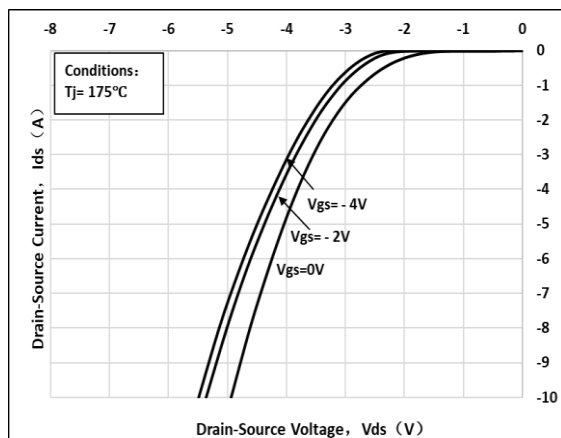




Fig 11: 3rd Quadrant Characteristics($T_J = -55^\circ\text{C}$)

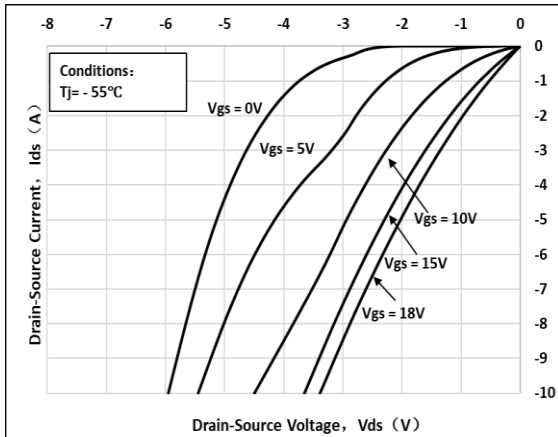


Fig 12: 3rd Quadrant Characteristics($T_J = 25^\circ\text{C}$)

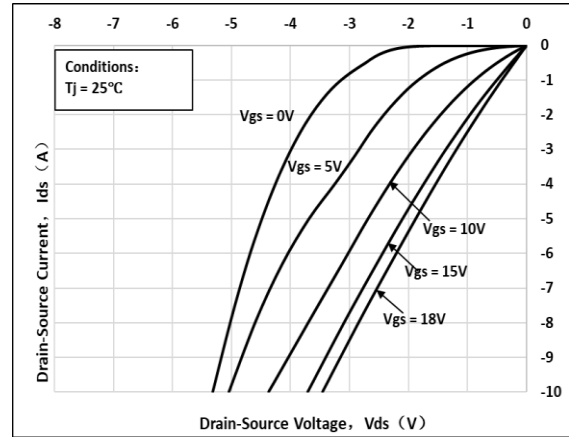


Fig 13: 3rd Quadrant Characteristics($T_J = 175^\circ\text{C}$)

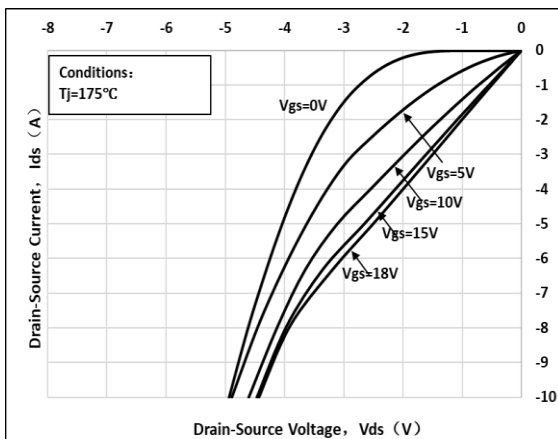


Fig 14: Gate Charge Characteristics

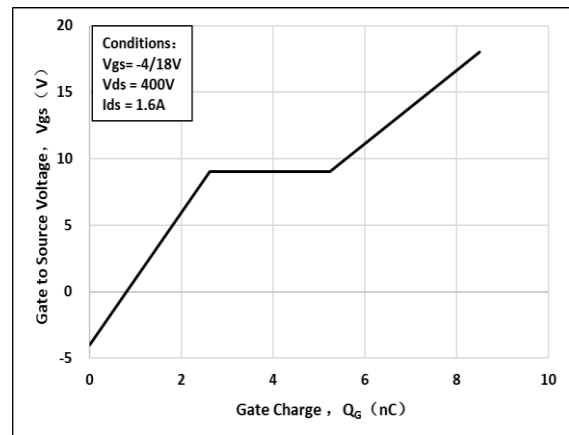


Fig 15: Continuous Drain Current vs. Case Temperature

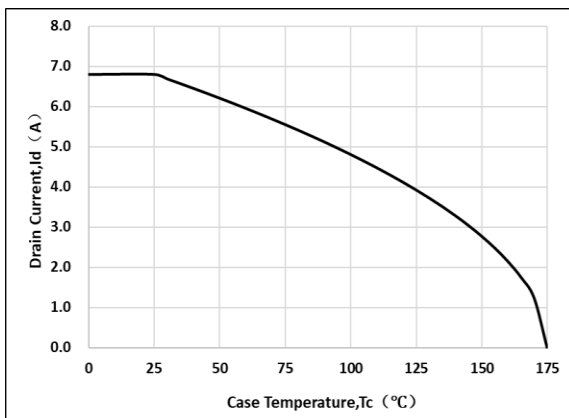




Fig 17: Capacitance Characteristics

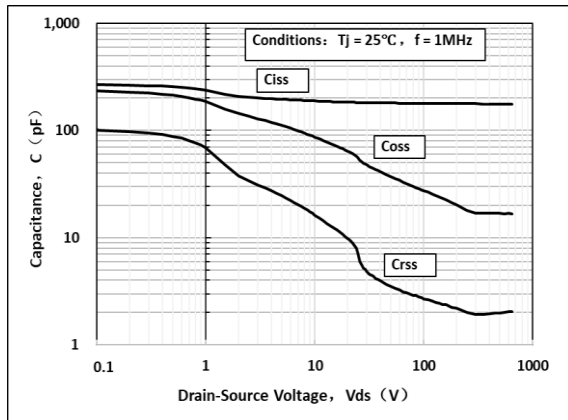
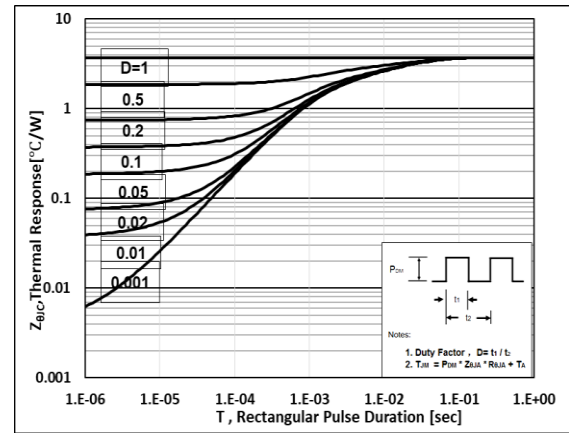


Fig 18: Transient Thermal Impedance



Test Circuit & Waveform

Figure A. Definition of switching times

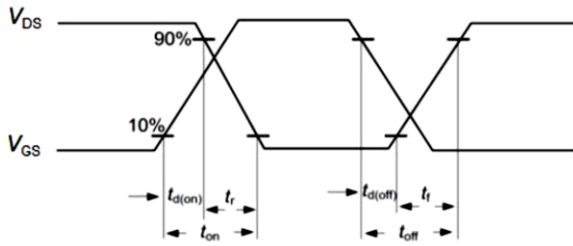
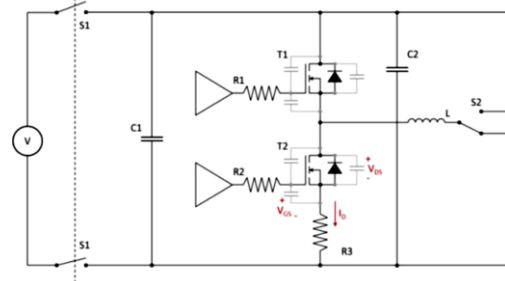


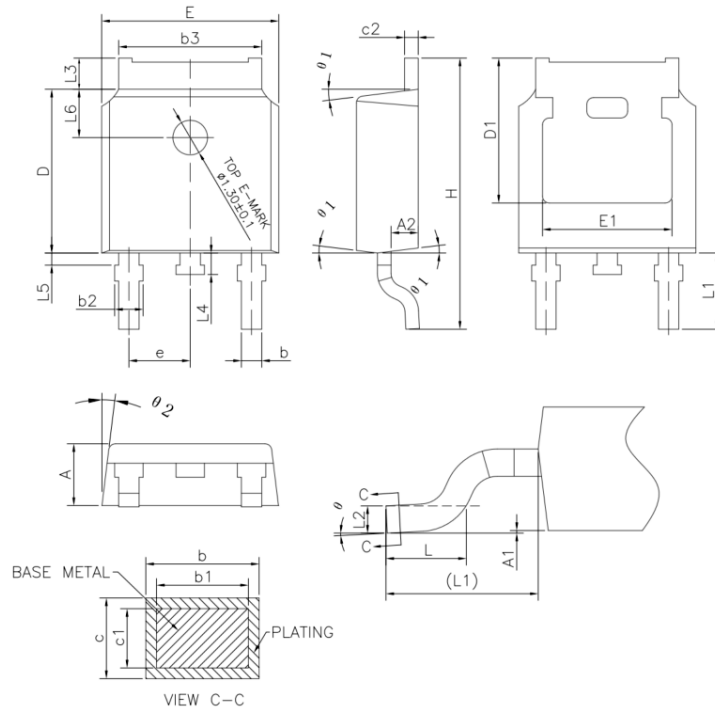
Figure B. Dynamic test circuit





Package Dimensions

Package TO-252-2L



SYMBOL	Unit: mm		
	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0	-	0.10
A2	0.90	1.01	1.10
b	0.72	-	0.85
b1	0.71	0.76	0.81
b2	0.72	-	0.90
b3	5.13	5.33	5.46
c	0.47	-	0.60
c1	0.46	0.51	0.56
c2	0.47	-	0.60
D	6.00	6.10	6.20
D1	5.25	-	-
E	6.50	6.60	6.70
E1	4.70	-	-
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90 REF		
L2	0.508 BSC		
L3	0.90	-	1.25
L4	0.60	0.80	1.00
L5	0.15	-	0.75
L6	1.80 REF		
θ	0°	-	8°
θ1	5°	7°	9°
θ2	5°	7°	9°



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